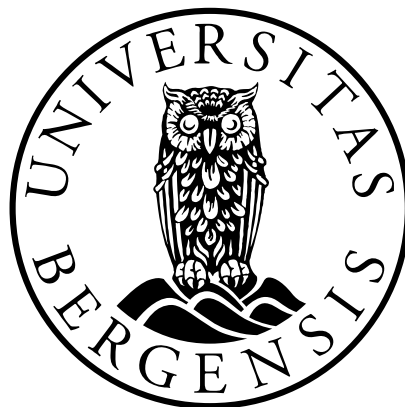


Assessing the Current International Legal Framework  
applicable to Abandoned, Lost or Otherwise Discarded  
Fishing Gear in the North-East Atlantic Ocean

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## Abbreviations and acronyms

|                    |  |
|--------------------|--|
| <b>ALDFG</b>       | Abandoned, lost or otherwise discarded fishing gear                                |
| <b>CCRF</b>        | Code of Conduct for Responsible Fisheries  |
| <b>EMFF</b>        | European Maritime and Fisheries Fund   |
| <b>EPR</b>         | Extended producer responsibility   |
| <b>EU</b>          | European Union   |
| <b>FAD</b>         | Fish aggregating device  |
| <b>FAO</b>         | Food and Agriculture Organization of the United Nations                            |
| <b>ICCAT</b>       | International Commission for the Conservation of Atlantic Tunas                    |
| <b>IMO</b>         | International Maritime Organization  |
| <b>IUU fishing</b> | Illegal, unreported and unregulated fishing  |
| <b>MARPOL</b>      | International Convention for the Prevention of Pollution from Ships                |
| <b>MPEC</b>        | IMO's Marine Environment Protection Committee                                      |
| <b>NEAFC</b>       | North-East Atlantic Fisheries Commission   |
| <b>OSPAR</b>       | Convention for the Protection of the Marine Environment of the North-East Atlantic |
| <b>PRF</b>         | Port reception facility  |
| <b>RFMO/A</b>      | Regional fisheries management organization/arrangement                             |
| <b>SUP</b>         | Single-use plastics  |
| <b>UNCLOS</b>      | United Nations Convention on the Law of the Sea                                    |
| <b>UNEP</b>        | United Nations Environment Programme   |
| <b>UNFSA</b>       | United Nations Fish Stocks Agreement   |
| <b>VCLT</b>        | Vienna Convention on the Law of Treaties   |
| <b>VGMFG</b>       | Voluntary Guidelines on the Marking of Fishing Gear                                |

# 1. Introduction

## 1.1 Theme, legal problem and topicality of the thesis

Marine plastic pollution continues to place pressure on the world's oceans, with abandoned, lost or otherwise discarded fishing gear (ALDFG) being an increasing problem that challenges marine conservation and management with its numerous negative environmental, ecological and socioeconomic impacts.<sup>1</sup> While fishing gear has been lost, abandoned or otherwise discarded in the oceans since fishing began,<sup>2</sup> the amount, distribution and effects of ALDFG have likely risen in recent decades.<sup>3</sup> This is due to the rapid expansion of fishing efforts and fishing grounds, combined with the transition to synthetic, less expensive and more durable materials used for fishing gear.<sup>4</sup> With its effects having repercussions on a global scale, the problem of ALDFG is transboundary.<sup>5</sup> International and regional cooperation is therefore vital to solving the problem.

There is, however, currently no international treaty with the primary objective of preventing and regulating marine plastic pollution, let alone ALDFG. While work is being done to develop an international legally binding instrument on plastic pollution,<sup>6</sup> the current legal framework remains fragmented, raising a challenge in terms of understanding the current regulation of ALDFG.

This brings the question of what the current regulation of abandoned, lost or otherwise discarded fishing gear in the North-East Atlantic Ocean is. The question will be answered through an analysis of global and regional instruments to identify, map out and assess the existing rules that address the problem. To do so, the thesis takes on an international perspective, reflecting the transboundary nature of the problem. Throughout the analysis,

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<sup>1</sup> Eric Gilman et alia, "Highest risk abandoned, lost and discarded fishing gear" (2021) 11 *Scientific Reports* <<https://www.nature.com/articles/s41598-021-86123-3>> accessed 30.09.2021; Huu-Luat Do and Claire W. Armstrong, "Ghost fishing gear and their effect on ecosystem services – Identification of knowledge gaps" (2023) 150 *Marine Policy* <<https://munin.uit.no/bitstream/handle/10037/28697/article.pdf?sequence=2>> accessed 11.10.2023.

<sup>2</sup> Graeme Macfayden, Tim Huntington and Rod Cappell, "Abandoned, lost or otherwise discarded fishing gear" (FAO and UNEP 2009) <<https://www.fao.org/3/i0620e/i0620e.pdf>> accessed 30.09.2023 p. 1.

<sup>3</sup> Gilman (n 1).

<sup>4</sup> Gilman (n 1).

<sup>5</sup> Global Environment Facility, "What is a transboundary problem?" (*iwlearn.net*) <<https://iwlearn.net/manuals/tda-sap-methodology/development-of-the-tda/identification-prioritisation-of-the-transboundary/what-is-a-transboundary-problem>> accessed 02.11.2023.

<sup>6</sup> UNEP, "Intergovernmental Negotiating Committee on Plastic Pollution" (*unep.org*) <<https://www.unep.org/inc-plastic-pollution>> accessed 02.11.2023.

possible gaps and/or inconsistencies in the regulation will also be identified and addressed. My choice of area, law, method, sources and the approach of the thesis will be addressed further below.

## 1.2 Thesis' scope

### 1.2.1 Delimitations in the subject of study

While marine plastic pollution makes up the overarching theme of this thesis, the analysis will be limited to addressing the regulation of ALDFG. Wastes and other ocean plastics not covered by this term will therefore not be of relevance. I will define the term ALDFG and what it covers further below. In addition, this thesis is further limited to addressing ALDFG in the ocean, and as such, fishing gear that have been washed up to shore will not be addressed.

### 1.2.2 Geographic scope

The area of focus is the North-East Atlantic. This is a legally defined area, illustrated in Figure 1 and Figure 2.

When determining which area is covered by the term “North-East Atlantic”, the OSPAR Convention<sup>7</sup> is the natural starting point. The Convention limits its maritime areas to the maritime area between the European continent and Greenland (see Figure 1). On a regional level, the European Commission’s Scientific, Technical and Economic Committee for Fisheries<sup>8</sup> defines the “Northeast Atlantic and adjacent Seas” as “FAO region 27.”<sup>9</sup> The Food and Agriculture Organization of the United Nations (FAO) Major Fishing Area 27<sup>10</sup> covers all of the maritime area between the European continent and Greenland (see Figure 2), its limitations coinciding with OSPAR’s maritime area. It is therefore natural for the term “North-East Atlantic” to be understood as the maritime area covered by OSPAR.

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<sup>7</sup> Convention for the Protection of the Marine Environment of the North-East Atlantic.

<sup>8</sup> Commission Decision of 25 February 2016 setting up a Scientific, Technical and Economic Committee for Fisheries [2016] OJ C74/4.

<sup>9</sup> Joint Research Centre, “Reports of the Scientific, Technical and Economic Committee for Fisheries (STECF) – CFP Monitoring – expansion of indicators (STECF-18-15)” (Publications Office of the European Union 2018) <<https://stecf.jrc.ec.europa.eu/documents/43805/2244454/STECF+18-15+-+CFP+monitoring+-+expansion+of+indicators.pdf/1008a964-267e-4e4e-9ad0-07200937f3cb?version=1.4>> accessed 28.10.2023 p. 15.

<sup>10</sup> FAO, “FAO Major Fishing Areas, ATLANTIC, NORTHEAST (Major Fishing Area 27)” (*fao.org*) <<https://www.fao.org/fishery/en/area/27/en>> accessed 28.10.2023.

OSPAR covers five regions; (1) the Arctic waters, (2) the Greater North Sea, (3) the Celtic Seas, (4) the Bay of Biscay and Iberian Coast and (5) the Wider Atlantic. Article 1 (a) of the Convention provides that other regional seas, such as the Baltic Sea and the Mediterranean Sea, that form part of the Atlantic Ocean,<sup>11</sup> are excluded from the maritime area covered by the Convention. For this reason, regional agreements covering these areas will not be assessed in this thesis. Article 1 (a) also provides that the areas that are covered include the maritime zones from the internal waters of the coastal states to the high seas, including the bed of those waters. Such an understanding is in line with the corpus of international environmental law, which requires States to “ensure that activities within their jurisdiction and control respect the environment of other States or areas beyond national control.”<sup>12</sup>

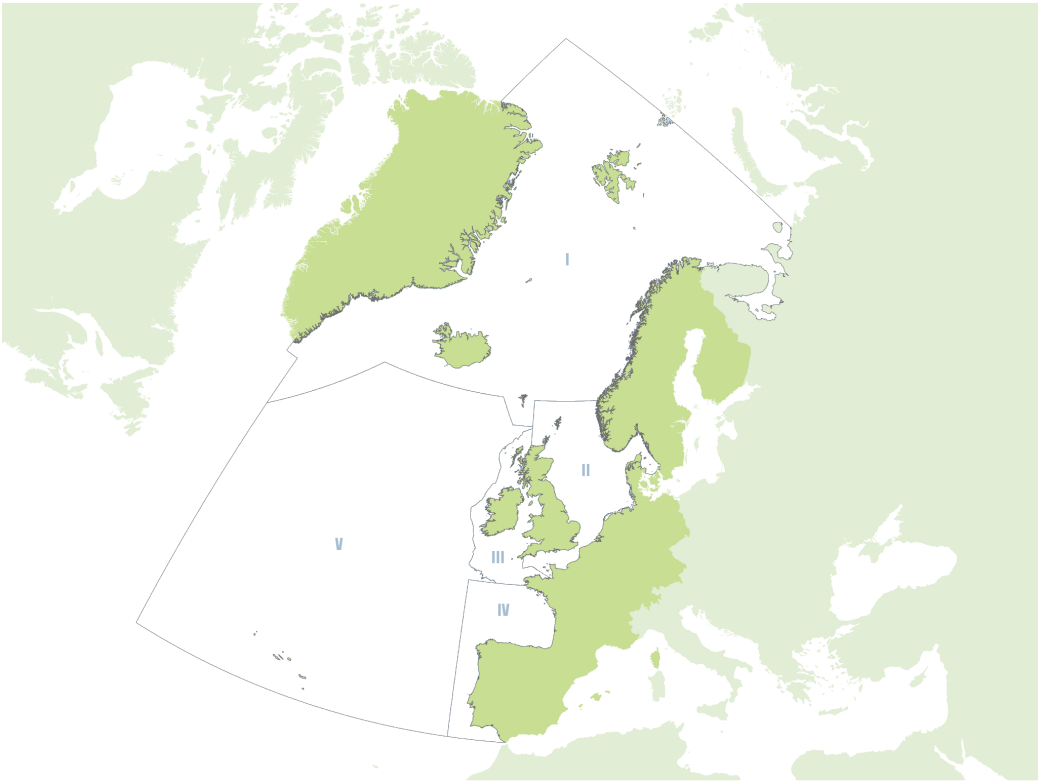


Figure 1 shows Region I-V of the North-East Atlantic as defined by OSPAR, credit: OSPAR Commission:  
<<https://www.ospar.org/convention/the-north-east-atlantic>> accessed 17.10.2023.

<sup>11</sup> Richard Howell Fleming et alia, “Atlantic Ocean” *Encyclopaedia Britannica*  
<<https://www.britannica.com/place/Atlantic-Ocean>> accessed 31.10.2023.

<sup>12</sup> International Court of Justice, “Legality of the Threat of Use of Nuclear Weapons, Advisory Opinion” (1996)  
<<https://www.icj-cij.org/public/files/case-related/95/095-19960708-ADV-01-00-EN.pdf>> accessed 25.09.2023 p. 241-242, para. 29.

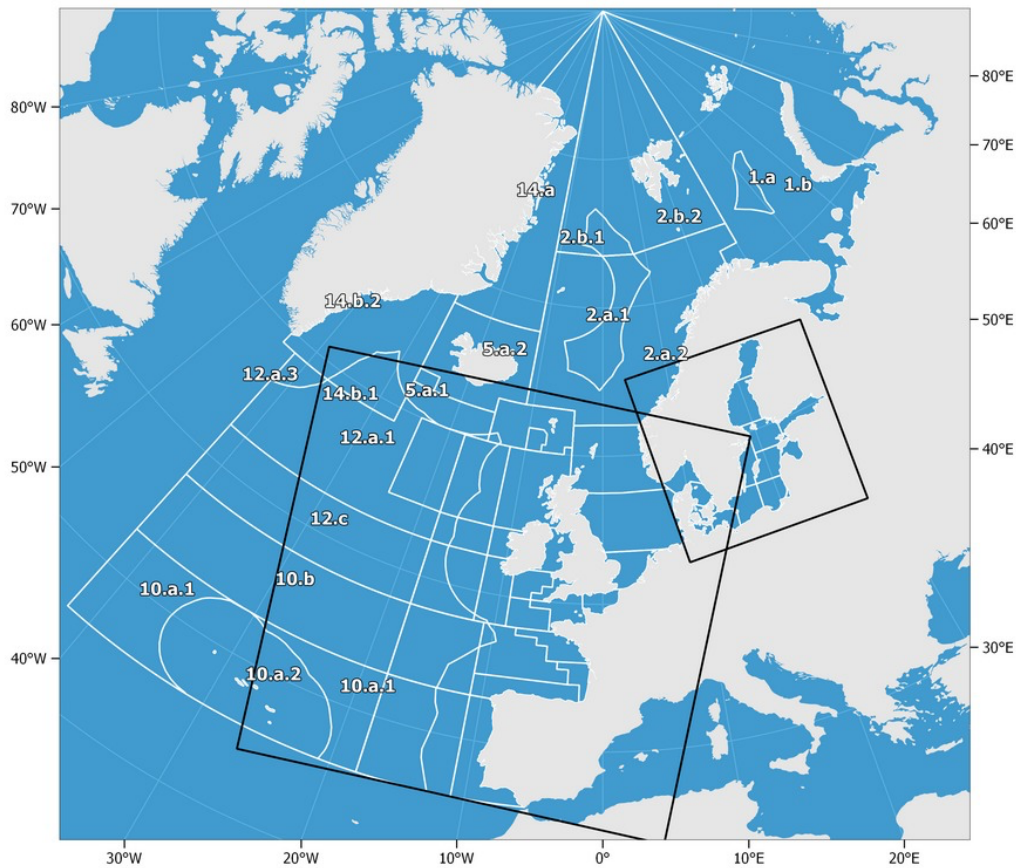


Figure 2 shows the boundaries of Major Fishing Area 27, credit: FAO: <<https://www.fao.org/fishery/en/area/27/en>> accessed 28.10.2023.

### 1.3 Legal method

#### 1.3.1 Briefly on the approaches used in the analysis

The thesis utilises both the dogmatic legal method and law in context. The dogmatic legal method “consists in clarifying the meaning and significance of the rule of law, proceeding from its own content.”<sup>13</sup> It is the study of dogmas – “binding, recognised and usable knowledge for a certain field” – seeking to describe the current law through the explanation of fundamental values, solutions to and reasons for the problem.<sup>14</sup> To clarify the current regulation of ALDFG I have made use of and compared several legal sources. These sources as well as their interpretations are discussed further below. Law in context involves treating

<sup>13</sup> Alexander V. Petrov and Alexey V. Zyryanov, “Formal-Dogmatic Approach in Legal Science in Present Conditions” (2018) 6 Journal of Siberian Federal University. Humanities and Social Sciences 968-973 <<https://pdfs.semanticscholar.org/4dea/9fd2615f88730728eed6cb05bc0e9fed65fc.pdf>> accessed 10.10.2023 p. 968.

<sup>14</sup> Raul Narits, “Principles of Law and Legal Dogmatics as Methods Used by Constitutional Courts” (2007) 12 Juridica International 15-22 <[https://www.juridicainternacional.eu/public/pdf/ji\\_2007\\_XII\\_15.pdf](https://www.juridicainternacional.eu/public/pdf/ji_2007_XII_15.pdf)> accessed 30.11.2023 p. 19.



the law in its “cultural, social, technological, environmental and economic context”, using materials from other disciplines to help explain the legal field in question.<sup>15</sup> To create the context in which to interpret the legal framework regulating ALDFG, I have made use of a variety of sources and instruments outside of law, in particular studies from the natural and social sciences.

The thesis, based on its geographical scope, resorts to the analysis of public international law and European Union (EU) law, both containing multiple legal instruments regulating the North-East Atlantic. However, examples of national implementations of EU law are to some extent utilised as a supplement to the analysis. Using these different sources is necessary to assess the problem and its regulation and it allows for the use of different elements to construct my answer to the research question. The characteristics of these fields of law are elaborated below.

### 1.3.2 A deeper dive into the sources used and their methodological challenges

#### Public international law

Public international law is a set of norms aimed at regulating the interaction between the subjects of international law, creating a common framework.<sup>16</sup> Article 38 of the International Court of Justice Statute<sup>17</sup> provides that there are three sources of international law: treaties, customary international law and general principles of law. For my analysis, I have made use of international conventions, both global and regional in scope. International conventions are treaties - binding agreements between States - signed between two or more States, acting as an international agreement.<sup>18</sup> Such treaties are interpreted in accordance with the rules laid down in the Vienna Convention (VCLT)<sup>19</sup>. Article 31 of the Convention embodies the general rule for the interpretation of treaties and is considered customary international law. Treaties are to be interpreted “in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.” In addition to treaties, modern international environmental law has been shaped by a series of principles and

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<sup>15</sup> Kenneth Armstrong, Maksymilian Del Mar and Sally Sheldon, “Law in Context” (*cambridge.org*) <<https://www.cambridge.org/core/series/law-in-context/387EA14AA111E65AB0120DA893AFAFCB>> accessed 10.10.2023.

<sup>16</sup> Curtis, “Public International Law” (*curtis.com*) <<https://www.curtis.com/glossary/public-international-law>> accessed 06.11.2023.

<sup>17</sup> Statute for the International Court of Justice.

<sup>18</sup> Library of Congress, “Public International Law: A Beginner’s Guide” (*guides.loc.gov*) <<https://guides.loc.gov/public-international-law/international-conventions>> accessed 06.11.2023.

<sup>19</sup> The Vienna Convention on the Law of Treaties.

concepts, including sustainable development, the polluter pays principle and the precautionary principle.<sup>20</sup>

Moreover, public international law contains a variety of “soft law” instruments that are non-binding for States,<sup>21</sup> but that contain political or moral commitments.<sup>22</sup> It has been recognised that the legal significance and effectiveness of these instruments vary depending on the context in which they were adopted, their normative content and the institutional setting in which they exist.<sup>23</sup>

### European Union law

Regional international law refers to both a set of rules a region has bestowed upon itself because of its members' shared, distinctive values, and to any rule having a regional scope of application.<sup>24</sup> Legal instruments drafted by the EU are therefore examples of regional law in the North-East Atlantic. Regulations and directives make up the relevant secondary legislation, and most Union environmental law comes in the form of directives.<sup>25</sup> Because directives require implementation whilst leaving the choice of how to implement the initiatives to the Member State, it is considered a useful form of legislation for environmental protective measures.<sup>26</sup>

The VCLT does not apply to the interpretation of EU Law. Despite the Convention applying to “treaties between States”, not all EU Member States are part of the Convention.

Furthermore, Article 2 (a) of VCLT states that a “treaty” is an agreement between States that

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<sup>20</sup> Frederico Cheever and Celia I. Campbell-Mohn, “Sustainable Development” *Encyclopedia Britannica* <<https://www.britannica.com/topic/environmental-law/Sustainable-development>> accessed 10.10.2023.

<sup>21</sup> Morten Ruud and Geir Ulfstein, *Innføring i folkerett* (5<sup>th</sup> edn Universitetsforlaget 2018) p. 77.

<sup>22</sup> Philippe Gautier, “Non-Binding Agreements” (*opil.ouplaw.com*) <<https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e1444>> accessed 06.11.2023.

<sup>23</sup> Mauro Barelli, “The Role of Soft Law in the International Legal System: The Case of the United Nations Declaration on the Rights of Indigenous Peoples” (2009) 58 *The International and Comparative Law Quarterly* 957-983 <<https://www.cambridge.org/core/journals/international-and-comparative-law-quarterly/article/role-of-soft-law-in-the-international-legal-system-the-case-of-the-united-nations-declaration-on-the-rights-of-indigenous-peoples/277C7A9DB6C1D24DCA0A540A20E77999>> accessed 10.12.2023.

<sup>24</sup> Mathias Forteau, “Regional International Law” (*opil.ouplaw.com*) <<https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e1463>> accessed 06.11.2023.

<sup>25</sup> Stephen Hodgson, “Legal aspects of abandoned, lost or otherwise discarded fishing gear” (FAO and IMO 2022) <<https://www.fao.org/3/cb8071en/cb8071en.pdf>> accessed 13.10.2023 p. 30-31.

<sup>26</sup> Margot Horspool, Matthew Humphreys and Michael Wells-Greco, *European Union Law* (10<sup>th</sup> edn Oxford University Press 2018) p. 534.

is “governed by international law”. Because the EU legal system is based on several sources of law and is its own autonomous system it therefore falls outside of the scope of the VCLT.<sup>27</sup>

Similar to public international law, EU law contains various principles that apply to the development of environmental law and policy.<sup>28</sup> EU environment policy rests on the precautionary principle, preventing and rectifying pollution at its source and on the polluter pays principle.<sup>29</sup>

Because soft law instruments such as recommendations and opinions only have persuasive effects, they are seldom used in EU environmental law.<sup>30</sup>

Utilising EU law also brings the question of the EEA Agreement and the relationship between these fields of law. There have been examples where EU legislation considered EEA relevant has not been incorporated into the Agreement.<sup>31</sup> One such example is the Marine Strategy Framework Directive<sup>32</sup>. Questions on the EEA Agreement’s applicability stem from the Norwegian Government arguing that the term “territory” in Article 126 of the Agreement excludes the application of EEA law outside of the territorial sea.<sup>33</sup> This particular issue has been addressed by several authors and will not be elaborated further in the thesis.<sup>34</sup> The focus will therefore remain on EU- and public international legislation.

#### 1.4 Approach and content

The thesis consists of six main chapters. Chapter 2 introduces the problem of ALDFG and gives insight into why regulation is needed, addressing both its causes and consequences. Chapter 3 reviews the legal framework on a more general basis. The goal is to establish a

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<sup>27</sup> Horspool et alia (n 26) p. 150.

<sup>28</sup> Horspool et alia (n 26) p. 535.

<sup>29</sup> Christian Kurrer and Nicoleta Lipcaneanu, “Environment Policy: general principles and basic framework” (*europarl.europa.eu*, 2023) <<https://www.europarl.europa.eu/factsheets/en/sheet/71/environment-policy-general-principles-and-basic-framework>> accessed 05.11.2023.

<sup>30</sup> Horspool et alia (n 26) p. 534.

<sup>31</sup> Hans Christian Bugge, *Lærebok i miljøforvaltningsrett* (5<sup>th</sup> edn Universitetsforlaget 2019) p. 130.

<sup>32</sup> Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy [2008] OJ L164/19.

<sup>33</sup> Meld.St.5 (2012-2013) Report to the Storting (White Paper) “The EEA Agreement and Norway’s other agreements with the EU” p. 14.

<sup>34</sup> Read more about this in Tina Hunter and Ignacio Herrera Anchustegui, “Ernst, are you kidding me? Reflections about Norwegian energy law by non-Norwegian energy lawyers” in Berte-Elen Reinertsen Konow, Hans Fredrik Marthinussen and Knut Einar Skodvin (eds) *Fakultetsbyggjar, vestlending og verdsborgar: Festskrift til Ernst Nordtveit 70 år* (Cappelen Damm 2023) p. 414-415.

possible legal definition for ALDFG, identify the general rules and requirements developed in the legislation to handle marine plastic pollution and analyse whether these *general rules and requirements* cover ALDFG. Chapters 4, 5, 6 and 7 take a deeper dive into *specific measures* derived from the more general obligations and the existing rules applicable to ALDFG in the North-East Atlantic. I have classified these measures into four categories: preventive measures, responsibility schemes, mitigation measures and curative measures.

## 2. Understanding the problem: What is abandoned, lost or otherwise discarded fishing gear?

### 2.1 What is ALDFG?

ALDFG, also referred to as “ghost gear” or “derelict fishing gear”, represents a considerable component of global marine plastic pollution, impacting fishers, coastal communities, the seafood industry, marine wildlife and habitats.<sup>35</sup> It has been recognised by FAO as a global problem since the 1980s.<sup>36</sup>

It is commonly accepted that the term refers to fishing gear that is not under the management of fishermen, regardless of the reason.<sup>37</sup> ALDFG includes hooks, pelagic and demersal longlines, nets, including gillnets; trammel nets; seine nets; trawl net fragments and fish aggregating devices (FADs), pots and other traps used by fishers to trap and harvest marine resources. ALDFG can also include gear components such as buoys, sinkers (weights for sinking gear), twines, ropes and cut-off ropes.<sup>38</sup> ALDFG is thought to be the main contributor from the fisheries sector to the generation of microplastic in aquatic environments,<sup>39</sup> with gear components often being manufactured using synthetic fibres or polymers such as nylon.<sup>40</sup>

ALDFG must not be confused with end-of-life fishing gear, which is removed from the sea by the fishers themselves because of wear and tear. End-of-life fishing gear is relatively clean, can be manually sorted into individual material types and has different recycling options

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<sup>35</sup> Kelsey Richardson et alia, “Global Causes, Drivers, and Prevention Measures for Lost Fishing Gear” (2021) 8 *Frontiers in Marine Science* <<https://www.frontiersin.org/articles/10.3389/fmars.2021.690447/full>> accessed 05.10.2023.

<sup>36</sup> Committee on Fisheries, “Addressing environmental issues during fishing operations: progressing towards the 2025 reduction of ALDFG” <<https://www.fao.org/3/MW869EN/mw869en.pdf>> accessed 18.10.2023 p. 3.

<sup>37</sup> Benjamin M. Drakeford, Andy Forse and Pierre Failler, “The economic impacts of introducing biodegradable fishing gear as a ghost fishing mitigation in the English Channel static gear fishery” (2023) 192 *Marine Pollution Bulletin* <<https://www.sciencedirect.com/science/article/pii/S0025326X23003491>> accessed 26.10.2023; Georgia Strait Alliance, “Abandoned, lost or other discarded fishing gear (ALDFG)” ([georgiastrait.org](http://georgiastrait.org)) <<https://georgiastrait.org/education-and-outreach/voices-of-salish-sea-youth/abandoned-lost-or-other-discarded-fishing-gear-aldfg/>> accessed 06.11.2023.

<sup>38</sup> Maria Tsakona et alia, “Drowning in Plastics - Marine Litter and Plastic Waste Vital Graphics” (UNEP 2021) <<https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/36964/VITGRAPH.pdf>> accessed 10.12.2023 p. 23.

<sup>39</sup> Amy Lusher, Peter Hollman and Jeremy Mendoza-Hill, “Microplastics in fisheries and aquaculture. Status of knowledge on their occurrence and implications for aquatic organisms and food safety” (FAO 2017) <<https://www.fao.org/3/I7677E/I7677E.pdf>> accessed 26.11.2023 p. 67.

<sup>40</sup> Manfred Klinkhardt, “Fishing gear made from biodegradable plastic” *Eurofish Magazine* (17.02.2023) <<https://eurofish.dk/fishing-gear-made-from-biodegradable-plastic/>> accessed 11.10.2023.

available.<sup>41</sup> ALDFG on the other hand, is retrieved from the sea, entangled and mixed with marine debris, organic matter or metal wastes. It is therefore unlikely to be recycled and is in some cases difficult to manage in already existing waste systems.<sup>42</sup>

## 2.2 What are the consequences that arise from ALDFG's presence in the sea and why does it need regulation?

Scientists have estimated that as much as 5.7 per cent of all fishing nets, 8.6 per cent of all traps and 29 per cent of all lines are yearly lost in the world's oceans.<sup>43</sup> ALDFG can sink to the seabed where it can damage organisms and habitats through abrasion, entanglement and dragging.<sup>44</sup> Synthetic compounds, including microplastics derived from fishing gear and lead from fishing weights, can also accumulate in marine food webs.<sup>45</sup> ALDFG can also drift with currents, where it can interact with marine wildlife, provide habitat for invasive species and pose a threat to navigational safety.<sup>46</sup> An extreme example of the latter includes the propellers of a ferry getting entangled in a 10 mm nylon rope, causing the vessel to turn, capsize and sink.<sup>47</sup> ALDFG can also continue to catch both target and non-target species, often referred to as "ghost fishing", which is when ALDFG continues to catch and kill organisms.<sup>48</sup> The harmful impacts of ghost fishing on both target and non-target species result in both environmental and economic damage, consequently affecting the sustainability of fisheries, food security and livelihoods.<sup>49</sup> Even though limited available data makes it difficult to quantify the exact extent of the negative economic consequences for fishers,<sup>50</sup> it is recognised that ghost fishing is essentially in competition with commercial fishing.<sup>51</sup>

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<sup>41</sup> OSPAR Commission, "OSPAR scoping study on best practices for the design and recycling of fishing gear as a means to reduce quantities of fishing gear found as marine litter in the North-East Atlantic" (OSPAR 2020) <<https://www.ospar.org/documents?v=42718>> accessed 18.10.2023 para. 2.1.6.

<sup>42</sup> OSPAR Commission (n 41) para. 2.1.6.

<sup>43</sup> Kelsey Richardson, Britta Denise Hardesty and Chis Wilcox, "Estimates of fishing gear loss rates at a global scale: A literature review and meta-analysis" (2019) 20 *Fish and Fisheries* 1218-1231 <<https://onlinelibrary.wiley.com/doi/10.1111/faf.12407>> accessed 10.10.2023.

<sup>44</sup> Richardson et alia (n 35).

<sup>45</sup> Eric Gilman, "Status of international monitoring and management of abandoned, lost and discarded fishing gear and ghost fishing" (2015) 60 *Marine Policy* 225-239 <<https://www.sciencedirect.com/science/article/abs/pii/S0308597X1500175X?via%3Dihub>> accessed 11.10.2023.

<sup>46</sup> Richardson et alia (n 35).

<sup>47</sup> Macfayden et alia (n 2) p. 41.

<sup>48</sup> Gilman (n 45).

<sup>49</sup> Do and Armstrong (n 1).

<sup>50</sup> European Parliament resolution of 25 March 2021 on the impact on fisheries of marine litter [2021] OJ C494/14.

<sup>51</sup> Drakeford et alia (n 37).

Despite these serious consequences, the magnitude of the problem is understudied. There is therefore limited information on its impacts and the lifecycle and end-of-life management of non-biodegradable fishing gear.<sup>52</sup>

From this, it can be concluded that ALDFG is a threefold issue: an environmental problem, a fishing problem and a maritime transport problem.<sup>53</sup> Regulating such a problem would therefore not only be beneficial for marine biodiversity, but it would also secure public interest in terms of limiting the economic damage to fisheries, removing a navigational risk and reducing the amount of microplastics entering the food chain and being ingested.

### 2.3 What are the causes of ALDFG?

Studies show that there are numerous causes of ALDFG, often dividing them into environmental, operational, behavioural or management pressures.<sup>54</sup> Common environmental causes include bad weather; gear movement from currents and tides; interactions with wildlife and gear snagging upon the seafloor.<sup>55</sup> Operational fishing factors include illegal, unreported and unregulated fishing (IUU fishing); conflicts with other fishers, often via gear and vessel interactions, and vessels running over fishing gear;<sup>56</sup> improper gear designs and materials;<sup>57</sup> vandalism and/or theft and the cost of gear retrieval and gear disposal.<sup>58</sup> Behavioural causes consist of a lack of fishing experience; improper fishing methods; operator errors and lack of awareness of issues surrounding ALDFG.<sup>59</sup> There are also insufficient fisheries management pressures, including inadequate spatial management; inadequate enforcement of rules; inadequate gear marking; inadequate loss reporting requirements and lack of limits on fishing efforts.<sup>60</sup>

In addition to these four categories, there are also more indirect causes. These include the unavailability of onshore waste disposal facilities, along with their cost of use and

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<sup>52</sup> Gilman et alia (n 1).

<sup>53</sup> Hodgson (n 25) p. 8.

<sup>54</sup> Richardson et alia (n 35).

<sup>55</sup> Gilman (n 45); Richardson et alia (n 35).

<sup>56</sup> MIO-ECSDE, OJ L

<sup>57</sup> Gilman (n 45).

<sup>58</sup> MIO-ECSDE (n 56).

<sup>59</sup> Richardson et alia (n 35).

<sup>60</sup> Gilman (n 45); Richardson et alia (n 35).

accessibility.<sup>61</sup> This results in discarding fishing gear at sea being viewed as more practical or economical than disposal onshore.<sup>62</sup>

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<sup>61</sup> MIO-ECSDE (n 56).

<sup>62</sup> Gilman (n 45).



### 3. A deeper dive: The regulation of marine plastic pollution and its applicability to ALDFG

#### 3.1 Is there a legal definition of ALDFG? If so, what are the criteria?

Without a global treaty regulating ALDFG it is essential to understand what is covered by the legal instruments that *do* exist. This chapter will therefore analyse the different terms used in the legal instruments, piecing together a legal definition for ALDFG. It will do so by first looking at the wider term “fishing gear” at both a global and regional level before diving deeper into what is required for this gear to be considered “ALDFG”. The analysis is summarised in Table 1 below.

At a global level, there seem to be few instruments that directly address fishing gear. Rather, the term is indirectly covered by wider terms such as “waste or other matter”, defined in Article 8 (1) of the London Protocol<sup>63</sup> and “pollution”, defined in Article 1 (d) of OSPAR.

However, the MARPOL Convention<sup>64</sup> is a binding instrument that directly addresses fishing gear. Article 1 (6) of MARPOL Annex V defines fishing gear as “any physical device or part thereof or combination of items that may be placed on or in the water or on the seabed with the intended purpose of capturing or controlling (for subsequent capture) or harvesting, marine or freshwater organisms.” This means that all types of fishing gear, regardless of which material it is made out of, is subject to the provisions in MARPOL Annex V. MARPOL however, does not clarify the requirements for fishing gear to be considered ALDFG.

At a regional level, “fishing gear” is defined in Article 3 (4) of the Single-Use Plastics Directive<sup>65</sup> as “any item or piece of equipment that is used in fishing or aquaculture to target, capture or rear marine biological resources or that is floating on the sea surface, and is deployed with the objective of attracting and capturing or of rearing such marine biological resources”. However, Article 2 provides that only “fishing gear containing plastics”, including

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<sup>63</sup> Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter.

<sup>64</sup> International Convention for the Prevention of Pollution from Ships.

<sup>65</sup> Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment [2019] OJ L155/1.

biodegradable/bio-based plastics,<sup>66</sup> is covered by the Directive. Similar to MARPOL the SUP Directive does not define “ALDFG”.

From this, it can be concluded that there are no binding definitions for ALDFG in the current legislation. There are, however, criteria contained in soft law instruments that can supplement the definitions laid down in the above-mentioned hard law instruments and contribute to the understanding of ALDFG. These criteria are discussed below.

The Voluntary Guidelines on the Marking of Fishing Gear (VGMFG)<sup>67</sup> were developed by FAO to prevent ALDFG and reduce its harmful impacts. Paragraph 16 in the guidelines provides that “fishing gear” is defined “in accordance with MARPOL Annex V”. The same definition therefore applies. “Abandoned fishing gear” is defined as “fishing gear over which that operator/owner has control and that could be retrieved by owner/operator, but that is deliberately left at sea due to force majeure or other unforeseen reasons”. “Lost fishing gear” is defined as “fishing gear over which the owner/operator has accidentally lost control and that cannot be located and/or retrieved by the owner/operator”. Finally, “discarded fishing gear” is defined as “fishing gear that is released at sea without any attempt for further control or recovery by the owner/operator”. Despite these guidelines being voluntary, the European Parliament has called upon Member States to adopt them,<sup>68</sup> signalling an accept of the definitions laid down in the guidelines.

Below, I have summarised the findings in a table to create a clear illustration of the different definitions provided by the presented instruments. The goal is to establish a possible legal definition of ALDFG based on these definitions. The table includes the different legal instruments that provide some definition of fishing gear or the criteria of ALDFG, the instrument’s scope, whether it is binding, the term used and its definition.

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<sup>66</sup> INTERREG, “The importance of the SUP Directive” (*projects2014-2020.interregeurope.eu*, 2020) <<https://projects2014-2020.interregeurope.eu/caponlitter/news/news-article/9039/the-importance-of-the-sup-directive/>> accessed 26.11.2023.

<sup>67</sup> FAO, “Voluntary Guidelines on the Marking of Fishing Gear” (FAO 2019) <<https://www.fao.org/3/ca3546t/ca3546t.pdf>> accessed 28.09.2023.

<sup>68</sup> European Parliament (n 50) para. 19.

**Table 1: Terms and definitions used in the legislation**

| <b>Legal Instrument</b>                              | <b>Scope</b> | <b>Binding effect</b>  | <b>Term used</b>         | <b>Definition</b>   |
|--|--------------|--|--------------------------|---|
| MARPOL Annex V                                       | Global       | Adopting Annex V is voluntary. Contracting Parties that have adopted the Annex are bound by its provisions | “Fishing gear”           | “Any physical device or part thereof or combination of items that may be placed on or in the water or on the seabed with the intended purpose of capturing or controlling (for subsequent capture) or harvesting, marine or freshwater organisms”                   |
| Voluntary Guidelines for the Marking of Fishing Gear | Global       | The guidelines are voluntary in scope and not binding  | “Fishing gear”           | “Any physical device or part thereof or combination of items that may be placed on or in the water or on the seabed with the intended purpose of capturing or controlling for subsequent capture or harvesting marine organisms, in accordance with MARPOL Annex V” |
|  |              |  | “Abandoned fishing gear” | “Fishing gear over which that operator/owner has control and that could be retrieved by owner/operator, but that is deliberately left at sea due to force majeure or other unforeseen reasons”  |
|  |              |  | “Lost fishing gear”      | “Fishing gear over which the owner/operator has accidentally lost control and that cannot be located and/or retrieved by the owner/operator”  |

**Table 1: Terms and definitions used in the legislation**

| <b>Legal Instrument</b>                              | <b>Scope</b> | <b>Binding effect</b>                                 | <b>Term used</b>         | <b>Definition</b>  |
|--|--------------|---|--------------------------|--|
| Voluntary Guidelines for the Marking of Fishing Gear | Global       | The guidelines are voluntary in scope and not binding | “Discarded fishing gear” | “Fishing gear that is released at sea without any attempt for further control or recovery by the owner/operator”   |
| SUP Directive  | Regional     | Binding for EU Member States                          | “Fishing gear”           | “Any item or piece of equipment that is used in fishing or aquaculture to target, capture or rear marine biological resources or that is floating on the sea surface, and is deployed with the objective of attracting and capturing or of rearing such marine biological resources” |

From this assessment three elements and circumstances that can help determine the criteria for ALDFG can be derived. These are linked to the intention behind the device, the device’s ability to capture marine resources and the device’s management.

Firstly, all of the instruments make it clear that for a device or piece thereof to be considered fishing gear, it must have been created with the intention of capturing marine biological resources. This means that a cut-off rope from pots is considered part of fishing gear whereas rope used for other means on a vessel is not.

Secondly, though it is not written as an absolute requirement, the actual ability to capture these resources is implicitly implied. A rope can be thrown at sea with the intention of capturing resources, but without the actual ability to do so, it is difficult to view it as anything other than a simple rope. However, it is not a requirement that the device or piece thereof must retain this ability throughout its entire lifecycle. A cut-off rope from pots may not be able to capture resources, but it was once part of a device that had this ability. If this understanding is accepted it is clear that other terms used synonymously with ALDFG, such as “ghost gear”, do not cover the same aspects. Ghost fishing gear is defined as fishing gear

that has “the ability [...] to continue fishing after all control of that gear is lost by the fisherman.”<sup>69</sup> ALDFG without the ability to continue fishing thus cannot be considered “ghost gear”. The term “ghost gear” therefore appears to be more nuanced concerning the *impacts* of ALDFG rather than a synonymous term.<sup>70</sup>

Lastly, there must have occurred a loss of management of said device or piece thereof. This loss of management can either be intentional or accidental, but it has to be because of one of three reasons: (1) a device or piece thereof, that could have been retrieved, has been deliberately left at sea; (2) a device or piece thereof has been accidentally lost and cannot be retrieved or (3) a device or piece thereof has been released at sea without any recovery attempts. With this in mind, the term “derelict fishing gear” is no longer a sufficiently synonymous term with ALDFG as it does not imply how the device or piece thereof ended up at sea.<sup>71</sup>

From this, a possible legal definition can be established. ALDFG can be understood as a device or piece thereof intended for and with the ability to, or at one point the ability to, capture marine biological resources, and that has been either deliberately left, accidentally lost or intentionally released into the marine environment.

### 3.2 Which rules exist to protect the North-East Atlantic from marine plastic pollution and do these apply to ALDFG?

#### 3.2.1 Introduction

There are multiple examples of global and regional instruments imposing upon States the obligation to protect the marine environment and achieve good environmental status in their waters. For example, Article 192 of the Convention on Law of the Sea (UNCLOS)<sup>72</sup> captures States’ responsibility to “protect and preserve the marine environment” while leaving it up to the States to adopt measures on a regional and national level.<sup>73</sup> Similarly, Article 2 of OSPAR

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<sup>69</sup> Ronald Joel Smolowitz, “Lobster, *Homarus americanus*, Trap Design and Ghost Fishing” (1978) <<https://spo.nmfs.noaa.gov/sites/default/files/pdf-content/MFR/mfr405-6/mfr405-61.pdf>> accessed 18.10.2023 p. 3.

<sup>70</sup> GESAMP, “Sea-based sources of marine litter” (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP/ISA 2021) <<http://www.gesamp.org/site/assets/files/2213/rs108e.pdf>> accessed 26.10.2023 p. 12.

<sup>71</sup> GESAMP (n 70) p. 12.

<sup>72</sup> United Nations Convention on the Law of the Sea.

<sup>73</sup> Nilüfer Oral, “From the Plastics Revolution to the Marine Plastics Crisis. A Patchwork of International Law” in Richard Barnes and Ronán Long (eds) *Frontiers in International Environmental Law: Oceans and Climate*

requires its Contracting Parties to take “necessary measures to protect the maritime area”. In addition, Article 1 of the Marine Strategy Framework Directive establishes a framework within which Member States “shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest.”<sup>74</sup>

With this in mind, this section will identify the *general requirements* developed in the legislation to handle marine plastic pollution, looking at whether these rules cover the problem of ALDFG and its extent and consequences as part of marine plastic pollution. The instruments containing these rules have different scopes and each has been drafted with a different context in mind, making up various parts of environmental, shipping and fisheries legislation. I have therefore classified the solutions to this problem based on the different sea-based origins of ALDFG. These are dumping, vessel-source pollution and fishing activities. This discussion will precede an assessment of specific measures to deal with ALDFG in Chapters 4, 5, 6 and 7.

### 3.2.2 Regulation of dumping and vessel-source pollution as a source of ALDFG

Dumping is defined in Article 1 (5) of UNCLOS as “any deliberate disposal of wastes and other matters from vessels”. Vessel-source pollution is not defined in the Convention, but it refers to “any type of pollution originating from vessels engaged in navigation or transportation, as distinguished from pollutants that are discharged from ships engaged in ocean dumping.”<sup>75</sup> Article 194 (3) (a) and (b) of UNCLOS imposes upon States the responsibility to take measures to minimise to the fullest extent possible the release of harmful substances through dumping and vessel pollution. These sources of pollution are further regulated in provisions laid down in Part XII of UNCLOS. These provisions have in turn been further strengthened and regulated through a myriad of instruments.

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*Challenges* (Brill-Nijhoff 2021) p. 281-315 <<https://brill.com/display/book/9789004372887/BP000015.xml>> accessed 18.11.2023.

<sup>74</sup> As of 19.07.2023 good environmental status had “not yet been achieved”, see European Commission, “EU Voluntary Review on the Implementation of the 2030 Agenda for Sustainable Development” (2023) <<https://commission.europa.eu/system/files/2023-06/SDG-Report-WEB.pdf>> accessed 18.11.2023 p. 162.

<sup>75</sup> John W. Kindt, “Vessel-Source Pollution and the Law of the Sea” (1984) 17 *Vanderbilt Journal of Transnational Law* 287-328 <<https://scholarship.law.vanderbilt.edu/cgi/viewcontent.cgi?article=2235&context=vjtl>> accessed 01.12.2023 p. 288.

Article 210 of UNCLOS requires States to adopt laws, regulations and measures to prevent, reduce and control pollution of the marine environment by dumping. This obligation to prevent dumping is strengthened by the London Convention<sup>76</sup>, which is concerned with the deliberate disposal of wastes at sea. Its complementary London Protocol shares similar objectives, but goes even further in that it prohibits all dumping unless it is explicitly permitted, see Article 4. OSPAR goes even further on this matter, with Article 2 of the Convention imposing upon Contracting Parties to take “all possible steps to prevent and eliminate pollution by dumping [...] of wastes or other matter”. None of the instruments explicitly address fishing gear, let alone ALDFG. However, as mentioned above, ALDFG is indirectly covered by the broader terms used by these instruments.

When it comes to shipping, Article 211 of UNCLOS requires States to establish international rules and adopt laws and regulations to prevent, reduce and control pollution of the marine environment from vessels. The International Maritime Organization (IMO) has adopted several instruments to address its contribution to the pollution of the marine environment. The principal instrument is MARPOL, as modified by the Protocol of 1978 relating thereto, with its basic objective being to prevent pollution from ships. In particular, Regulation 3 (2) of MARPOL Annex V prohibits, with a few exceptions, the disposal of all garbage into the sea, including fishing gear. Despite Annex V being optional more than 150 countries have signed it.<sup>77</sup>

The BASEL Convention<sup>78</sup> is also concerned with shipping and its relevance to marine waste. Article 2 (b) of the Convention requires Party Members to ensure “the environmentally sound management of hazardous wastes and other wastes”. With Decision BC-14/12<sup>79</sup> the scope of “other waste” in Annex II and “hazardous waste” in Annex VIII was expanded to also cover plastics, including fishing gear.

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<sup>76</sup> Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

<sup>77</sup> IMO, “Prevention of Pollution by Garbage from Ships” (*imo.org*)  
<<https://www.imo.org/en/ourwork/environment/pages/garbage-default.aspx#:~:text=MARPOL%20Annex%20V,-MARPOL%20Annex%20V&text=Although%20the%20Annex%20is%20optional,up%20to%20MARPOL%20Annex%20V>> accessed 30.09.2023.

<sup>78</sup> Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

<sup>79</sup> BC-14/12: Amendments to Annexes II, VIII and IX to the Basel Convention.

### 3.2.3 Regulation of fishing activities as a source of ALDFG

Fishing activities, as a source of ALDFG, encompass artisanal, commercial and recreational fishing.<sup>80</sup> It is not directly addressed in UNCLOS, but the Convention is supplemented by the United Nations Fish Stocks Agreement (UNFSA)<sup>81</sup>. Article 5 (f) of the Agreement requires States to “minimize pollution, waste, discards, [and] catch by lost or abandoned gear” through a set of measures. Article 5 (g) also states that the duty to protect biodiversity could include the prevention of debris from ALDFG. However, the Agreement only applies to fishing activities for highly migratory and straddling stockfish, making it limited in its scope. Other important mechanisms that address fisheries activities are regional fisheries management organisations (RFMO/As), which provide the principal mechanisms for the implementation of UNFSA, and the FAO Code of Conduct for Responsible Fisheries (CCRF)<sup>82</sup>.<sup>83</sup> The latter is a non-binding instrument that promotes waste minimisation. Its Article 8.7.1 encourages States to “introduce and enforce laws and regulations” based on MARPOL.

### 3.3 Findings and the further focus of the thesis

From this chapter, it can be concluded that there exist rules on an international level that require States to prevent marine plastic pollution, including ALDFG. Through this international regulation, States are given access to deal with the problem of ALDFG through regulation and measures derived from it. The further focus will therefore be on discussing and analysing the way this international law is implemented in practice.

The literature recognises that regulatory interventions to combat ALDFG can be broadly divided between measures that *prevent*, *mitigate* and *cure* the problem.<sup>84</sup> Extended producer responsibility (EPR) is often categorised as a preventive measure.<sup>85</sup> However, as EPR has more than just preventive effects, I have chosen to treat it as a separate category that is closely linked to preventive measures. It is also my understanding, based on the existing international rules, that an adequate regulation of ALDFG requires, at a minimum, that all stages of the

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<sup>80</sup> GESAMP (n 70) p. 11.

<sup>81</sup> Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stock.

<sup>82</sup> FAO, “Code of Conduct for Responsible Fisheries” (FAO 1995)

<[https://www.wto.org/english/tratop\\_e/rulesneg\\_e/fish\\_e/1995\\_fao\\_ccrf.pdf](https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/1995_fao_ccrf.pdf)> accessed 13.11.2023.

<sup>83</sup> Oral (n 73).

<sup>84</sup> Macfayden et alia (n 2) p. 17; Richardson et alia (n 35).

<sup>85</sup> EIA, “Convention on Plastic Pollution – Essential Elements: Fishing Gear” (EIA 2022)

<[https://apps1.unep.org/resolutions/uploads/eia\\_-\\_essential\\_elements\\_-\\_fishing\\_gear\\_0.pdf](https://apps1.unep.org/resolutions/uploads/eia_-_essential_elements_-_fishing_gear_0.pdf)> accessed 09.11.2023 p. 6.



fishing gear lifecycle are addressed through these measures. This includes the design, use, trade, end-of-life treatment and recovery from the marine environment.

The following assessment will therefore address global and regional legislation that leads towards preventive measures (Chapter 4), responsibility schemes (Chapter 5), mitigation measures (Chapter 6) and curative measures (Chapter 7). Each chapter will address which legal instruments provide the relevant legislation, which measures can be derived from it and whom it addresses.

## 4. Preventive measures

### 4.1 Introduction

Preventive measures are initiatives aimed at avoiding or reducing the occurrence of ALDFG in the environment.<sup>86</sup> In addition to making up the biggest category, the literature has established preventive measures as the most cost-effective interventions.<sup>87</sup>

At both a global and regional level there are multiple hard law and soft law instruments containing measures seeking to regulate and prevent ALDFG from entering the marine environment. As many of the instruments lead to multiple measures, I have chosen to structure my analysis based on the different measures the legislation leads to. These are presented from the most general measures to the most specific. The relevant measures include training and awareness-raising initiatives, the use of reasonable precautions and best practices, spatial management, increasing the effectiveness of handling IUU fishing, gear marking and providing adequate port reception facilities.<sup>88</sup>

### 4.2 Training and awareness-raising

Training and awareness-raising measures involve targeting the general public, fishers, port operators or marine users through local, national, regional or international campaigns.<sup>89</sup> Campaigns can take many forms depending on the target audience and it has been recognised that covering topics such as ALDFG sources, causes and impacts through these is an essential ALDFG prevention and reduction strategy.<sup>90</sup>

Training and awareness-raising measures are addressed in both global and regional instruments. At a global level, they are addressed by the STCW-F Convention<sup>91</sup> and the Guidelines for the Implementation of MARPOL Annex V<sup>92</sup>.

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<sup>86</sup> Ruben Savels et alia, “Economic assessment of abandoned, lost and otherwise discarded fishing gear (ALDFG) in the fishery sector of The Republic of Cyprus” (IUCN 2022) <[https://www.iucn.org/sites/default/files/2022-08/economic\\_assessment\\_of\\_abandoned\\_lost\\_and\\_otherwise\\_discarded\\_fishing\\_gear\\_aldfg\\_in\\_the\\_fishery.pdf](https://www.iucn.org/sites/default/files/2022-08/economic_assessment_of_abandoned_lost_and_otherwise_discarded_fishing_gear_aldfg_in_the_fishery.pdf)> accessed 27.10.2023 p. 3.

<sup>87</sup> Savels et alia (n 86) p. 3.

<sup>88</sup> Macfayden et alia (n 2) p. 17; Richardson et alia (n 35).

<sup>89</sup> Macfayden et alia (n 2) p. 71.

<sup>90</sup> GESAMP (n 70) p. 65.

<sup>91</sup> International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel.

<sup>92</sup> IMO Resolution MEPC.295(71) 2017 Guidelines for the Implementation of MARPOL Annex V.

The STCW-F Convention sets requirements of certification and minimum training for personnel working on fishing vessels to which the Conventions apply, to protect the marine environment and promote the safety of life at sea. The Convention was adopted by IMO in 1995 and is legally binding for Contracting Parties, though Parties may determine that certain provisions should not apply, wholly or in part, to the personnel of certain fishing vessels.<sup>93</sup> The Guidelines for the Implementation of MARPOL Annex V states that ship and reception facility operators should establish detailed training programmes that include the applicable regulations for handling and disposing of garbage, as well as that generalised public information programmes are needed to provide information to the public regarding the impacts of garbage at sea.<sup>94</sup>

At a regional level, the EU Commission has stressed the importance of promoting a greater involvement of actors in the fishing sector and ensuring the continuous exchange of information.<sup>95</sup> The most important legislation and initiatives regarding training and awareness-raising are the SUP Directive and the EU's Interreg Atlantic Area Programme<sup>96</sup>.

Article 10 of the SUP Directive requires Member States to take measures to inform users of fishing gear containing plastics about the availability of reusable alternatives, reuse systems and waste management options for such gear, as well as the best practices in sound waste management. In addition, users are to be informed of the impact of littering and other inappropriate waste disposal of fishing gear containing plastics on the environment, in particular on the marine environment. According to Article 8 (9), the cost of these measures is to be covered by the producers of fishing gear containing plastic.

EU's Interreg Atlantic Area Programme seeks to implement solutions to regional challenges, including environmental challenges. The Programme has financed the CleanAtlantic Project, which aims to increase awareness and change attitudes among stakeholders, and to deliver training and awareness activities addressed to various audiences.<sup>97</sup>

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<sup>93</sup> IMO, «International Convention on Standards of Training, Certification and Watchkeeping of Fishing Vessel Personnel (STCW-F), 1995» (*imo.org*) <<https://www.imo.org/en/ourwork/humanelement/pages/stcw-f-convention.aspx>> accessed 13.11.2023.

<sup>94</sup> IMO (n 92) para. 4.8 and 4.9.

<sup>95</sup> European Parliament (n 50) para. 18.

<sup>96</sup> INTERREG, “Atlantic Area 14-20” (*atlanticarea.eu*) <<https://www.atlanticarea.eu/page/2>> accessed 18.10.2023.

<sup>97</sup> INTERREG, “Tackling marine litter in the Atlantic Area” (*atlanticarea.eu*) <<https://www.atlanticarea.eu/project/7>> accessed 18.10.2023.

### 4.3 Reasonable precautions and best practices

Reasonable precautions and best practices are measures dealing with human actions and behaviour. At a global level, these measures are contained in MARPOL, OSPAR, the Global Ghost Gear Initiative's Best Practice Framework for the Management of Fishing Gear<sup>98</sup>, the International Guidelines on Bycatch Management and Reduction of Discards (Bycatch Guidelines)<sup>99</sup> and the International Whaling Commission's Best Practice Guidelines for Entanglement Responders<sup>100</sup>. At a regional level, these are regulated by the SUP Directive.

Regulation 3 (2) of MARPOL Annex V prohibits the discharge of all plastics, including fishing gear, into the sea, regulating both its use and end-of-life treatment. The prohibition is however subject to exceptions in Regulation 7 (3). One such exception is the accidental loss of fishing gear, provided that "all reasonable precautions" have been taken to prevent such a loss. Besides the wording "accidental loss" excluding dumping as a possibility, it is unclear what is considered a "reasonable precaution". The precautions to be taken are neither outlined in the Annex itself, nor anywhere else, leaving the interpretation up to the individual Contracting Parties. One could argue then that this uncertainty risks an uneven application of the rule across different jurisdictions.

Article 2 (3) (b) of OSPAR requires Contracting Parties to use the "best available techniques" and "best environmental practice" when carrying out programmes and measures, including aspects related to fishing gear. In contrast to MARPOL, OSPAR defines both terms in Appendix I of the Convention. "Best available technique" is defined as "the latest stage of development [...] of processes, of facilities or of methods of operation which indicate the practical sustainability of a particular measure for limiting discharge, emissions and waste", and "best environmental practices" is defined as "the application of the most appropriate combination of environmental control measures and strategies".

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<sup>98</sup> Global Ghost Gear Initiative, "Best Practice Framework for the Management of Fishing Gear" (GGGI 2021) <<https://static1.squarespace.com/static/5b987b8689c172e29293593f/t/6377ce7641773258453cb834/1668796037597/GGGI+Best+Practice+Framework+for+the+Management+of+Fishing+Gear+%28C-BPF%29+2021+Update+-+FINAL.pdf>> accessed 17.11.2023.

<sup>99</sup> FAO, "International Guidelines on Bycatch Management and Reduction of Discards" (FAO 2011). <<https://www.fao.org/3/ba0022t/ba0022t.pdf>> accessed 14.10.2023.

<sup>100</sup> IWC, "Principles and guidelines for large whale entanglement response efforts" (*iwc.int*) <[https://iwc.int/management-and-conservation/entanglement/best-practice-guidelines-for-entanglement-responde#:~:text=\(a\)%20Personnel%20working%20near%20or,whale%20and%20For%20using%20poles](https://iwc.int/management-and-conservation/entanglement/best-practice-guidelines-for-entanglement-responde#:~:text=(a)%20Personnel%20working%20near%20or,whale%20and%20For%20using%20poles)> accessed 16.11.2023.

Moreover, to reduce quantities of fishing gear found as marine litter in the North-East Atlantic, the OSPAR Commission conducted a scoping study on the best practices for the design and recycling of fishing gear.<sup>101</sup> The information collected through this study is believed to have the potential to aid Contracting Parties in implementing EPR schemes for fishing gear containing plastics, as set out in the SUP Directive.<sup>102</sup>

Multiple soft law instruments and initiatives address best practice measures. For example, the Global Ghost Gear Initiative has developed the Best Practice Framework for the Management of Fishing Gear. The framework is a practical guidance document focused on preventing, mitigating and remediating ALDFG. Recognising the diverse roles and responsibilities of different stakeholders, the document is directed at all sectors of the seafood supply chain. It identifies each group's best practice area and provides examples of best practices relevant to them.<sup>103</sup> Addressing a wide range of stakeholders ensures that each stage of the fishing gear lifecycle is covered by relevant best practices. In addition, the document is updated periodically so that the latest best practices are promoted as they develop.<sup>104</sup>

The Bycatch Guidelines identify measures deemed necessary to ensure the conservation of target and non-target species. The guidelines are voluntary in scope and serve as an instrument of reference to help States and RFMO/As formulate and implement appropriate measures for managing bycatch and reducing discards in fisheries. Paragraph 4.1.4 the guidelines provides that States and RFMO/As should ensure that bycatch management planning includes “best practices for bycatch management and reduction of discards”, followed by a non-exhaustive list of what these best practices should include.

Lastly, the International Whaling Commission has developed the Best Practice Guidelines for Entanglement Responders, seeking to provide guidelines for trained persons to best respond to reports of entangled live whales at sea.

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<sup>101</sup> OSPAR Commission (n 41) p. 10.

<sup>102</sup> CETMAR, “Tackling Marine Litter in the Atlantic Area” (INTERREG Atlantic Area 2021) <[http://www.cleanatlantic.eu/wp-content/uploads/2021/10/CleanAtlantic\\_Booklet\\_WasteManagement\\_300921.pdf](http://www.cleanatlantic.eu/wp-content/uploads/2021/10/CleanAtlantic_Booklet_WasteManagement_300921.pdf)> accessed 26.11.2023 p. 2.

<sup>103</sup> GGGI (n 98). p. 50-51.

<sup>104</sup> Ingrid Giskes et alia, “Report on good practices to prevent and reduce marine plastic litter from fishing activities” (FAO and IMO 2022) <<https://www.fao.org/3/cb8665en/cb8665en.pdf>> accessed 05.12.2023 p. 18.

At a regional level Article 10 (a) of the SUP Directive requires Member States to take measures to inform users of fishing gear containing plastics about the “best practices in sound waste management carried out in accordance with Article 13 of Directive 2008/98/EC<sup>105</sup>”.

Article 13 of the Waste Framework Directive requires Member States to ensure that waste management is carried out without harming the environment or endangering human health.

After examining these instruments it becomes evident that reasonable precautions and best practices as measures are an effective means to address and hold accountable a wide variety of different stakeholders and audiences. This allows for all stages of the fishing gear lifecycle to be covered and addressed.

#### 4.4 Spatial management

Marine spatial planning as a measure is a common approach in fisheries management.<sup>106</sup> It aims to consider and integrate all uses and users of selected marine spaces to plan and implement coordinated management.<sup>107</sup> This is a broad area of knowledge and discussing it in detail is outside the thesis’ scope. However, some marine spatial planning-linked endeavours have an indirect and sometimes direct influence in addressing the problem of ALDFG. The measure is implemented in the VGMFG at a global level, and is regulated by the Integrated Maritime Policy of the EU, the Maritime Spatial Planning Directive<sup>108</sup> and the Conservation Regulation<sup>109</sup> at a regional level.

On a global level, there appears to be a lack of mandatory legislation. Even though Paragraph 63 of the VGMFG encourages States, RFMO/As and other parties to consider segregation of areas by stationary and mobile gear to reduce gear conflict and gear loss it is not specified how this segregation is to be conducted. It is therefore up to the individual States to decide its specific measures. The result is that even if States do implement marine spatial planning, the lack of guidelines may result in different and uneven approaches.

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<sup>105</sup> Directive 2008/98/EC on waste and repealing certain Directives [2008] OJ L312/3.

<sup>106</sup> Hodgson (n 25) p. 40.

<sup>107</sup> Geoffery J. Meaden et alia, “Marine spatial planning for enhanced fisheries and aquaculture sustainability. Its application in the Near East” (FAO 2016) <<https://www.fao.org/3/i6043e/i6043e.pdf>> accessed 26.11.2023 p. 5.

<sup>108</sup> Directive 2014/89/EU establishing a framework for maritime spatial planning [2014] OJ L257/135.

<sup>109</sup> Regulation (EU) 2019/1241 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures [2019] OJ L198/105.

This issue is partly covered by the binding duty to conduct marine spatial planning on a regional level. The Integrated Maritime Policy of the EU, a policy framework covering the entire maritime economy, seeks to provide a more coherent approach to maritime issues.<sup>110</sup> To this end, the Maritime Spatial Planning Directive sets a minimum requirement for Member States to establish and implement maritime spatial planning, through which they shall “aim to contribute to the sustainable development of [the fisheries sector], and to the preservation, protection and improvement of the environment”. In addition, Article 22 (1) (c) of the Conservation Regulation allows Member States to put restrictions or prohibitions on “the use of certain fishing gear and on fishing activities in certain areas or during certain periods”. Moreover, Annexes V-VII of the Regulation each provide in their section C “closed or restricted areas” where certain types of fishing gear are prohibited.

As a measure, marine spatial planning appears to be a good tool to regulate the *use* of fishing gear, focusing less on the other stages of the fishing gear lifecycle. In particular, the regional legislation allows for the conservation of marine areas through the control of when, where and which gear is used, setting minimum requirements that Member States have to follow while allowing for a more thorough regulation in national legislation.

#### 4.5 Combatting illegal unreported and unregulated fishing

IUU fishing concerns all aspects and stages of the capture and utilisation of fishing that breaks with fisheries laws or occurs outside the reach of fisheries laws and regulations.<sup>111</sup> It contributes to ALDFG because IUU fishing vessels are more likely to lose their gear by fishing in risky areas and poor weather conditions, and are more likely to abandon their gear to destroy evidence and avoid capture.<sup>112</sup> Studies have found that effective deterrents to IUU fishing can reduce incentives for abandoning gear at sea,<sup>113</sup> thereby contributing to the prevention of ALDFG.

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<sup>110</sup> Marcus Ernst Gerhard Breuer, “Integrated Maritime Policy of the European Union” (*europarl.europa.eu*, 2023) <<https://www.europarl.europa.eu/factsheets/en/sheet/121/integrated-maritime-policy-of-the-european-union#:~:text=The%20EU's%20Integrated%20Maritime%20Policy,and%20by%20developing%20cross%2Dcutting>> accessed 12.11.2023.

<sup>111</sup> PEW, “FAQ: Illegal, Unreported, and Unregulated fishing” (*pewtrusts.org*, 2013) <<https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2013/08/27/faq-illegal-unreported-and-unregulated-fishing>> accessed 12.11.2023.

<sup>112</sup> EIA (n 85) p. 9.

<sup>113</sup> Gilman (n 45).

Measures related to combatting IUU fishing are contained in FAO's Agreement on Port State Measures (PSMA)<sup>114</sup> on a global level and in the IUU Regulation<sup>115</sup> on a regional level.

The PSMA is a binding international agreement specifically targeting IUU fishing. The Agreement seeks to prevent, deter and eliminate IUU fishing through effective port State measures. Port States are required to conduct inspections in ports, report results and notify relevant parties when there are clear grounds for believing a vessel has partaken in IUU fishing. Annex B (e) specifically mentions "fishing gear" to be included in the Port States' inspection procedures. Moreover, according to of the FAO legislative template on the implementation of port state measures, an authorised officer may seize any fishing gear that on reasonable grounds is believed to have been, is being or will be intended for fishing in violation of the Agreement.<sup>116</sup> Though the Agreement might not necessarily focus on preventing ALDFG from IUU fishing, it has been recognised that by improving vessel inspections the PSMA could be utilised in solving the problem of ALDFG.<sup>117</sup>

In the context of the EU, the IUU Regulation aims to make sure that no illegally caught fisheries products end up on the EU market. Article 10 (1) of the Regulation requires Member States to carry out inspections, in which they should be able to examine "nets or other gear". If fishing vessels use prohibited or non-compliant fishing gear Article 3 (1) (c) presumes the vessel to be engaged in IUU fishing. Where infringement is suspected Article 41 (1) (e) allows Member States to seize the fishing gear as an immediate enforcement measure. The Regulation thus captures the trade, use and end-of life treatment of the fishing gear lifecycle.

#### 4.6 Marking of fishing gear

Marking fishing gear is an important component in determining ownership of ALDFG, either to return the gear to its rightful owner or to enforce liability. Traditionally, marking has consisted of physical markings such as inscriptions, writings, tags and more. More recently,

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<sup>114</sup> FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.

<sup>115</sup> Council Regulation (EC) No 1005/2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing [2008] OJ L286/1.

<sup>116</sup> Judith Swan, "Implementation of Port State Measures" (FAO 2016)

<<https://www.fao.org/3/I5801E/i5801e.pdf>> accessed 08.12.2023 p. 54 para. 19.

<sup>117</sup> EIA, "Untangled, The plastics treaty's critical role in tackling fishing gear" (EIA 2023)

<[https://www.oceancare.org/wp-content/uploads/2023/05/briefing-untangled-plastics-treaty-fishing-gear\\_OC\\_2023\\_long.pdf](https://www.oceancare.org/wp-content/uploads/2023/05/briefing-untangled-plastics-treaty-fishing-gear_OC_2023_long.pdf)> accessed 14.11.2023 p. 9.



electronic devices such as radio and satellite transmitters have also been used for easier tracking.<sup>118</sup>

Gear marking is an accepted effective measure. When “combined with a robust fisheries management framework” it can help to reduce ALDFG by disincentivising the deliberate disposal of gear at sea and incentivising the reporting and retrieval of lost gear.<sup>119</sup> Gear marking may also help to achieve supply chain traceability, facilitating “extended producer responsibility schemes” for fishing gear.<sup>120</sup> This measure is addressed by a multitude of legal instruments. At a global level UNFSA, the CCRF, the VGMFG and the Honolulu Strategy<sup>121</sup> make up the relevant legislation.

Article 18 (3) (d) of UNFSA provides that measures taken by State Parties of UNCLOS shall include requirements for marking fishing gear for identification “in accordance with uniform and internationally recognizable [...] gear marking systems.” However, as mentioned before, the Agreement only applies to fishing activities for highly migratory and straddling stockfish. Similarly, Article 8.2.4 of the CCRF provides as a flag State duty that fishing gear should be marked in accordance with national legislation and that marking requirements should take into account “uniform and internationally recognisable gear marking systems”. It does however not provide what such systems may look like.

A more detailed gear marking standard can be found in the VGMFG. The guidelines apply to all types of fishing gear. Provisions related to promoting traceability of fishing gear across the supply chain specify how gear marking could be an essential tool for “combatting, minimising and preventing” ALDFG and “facilitating the identification and recovery of such gear”.<sup>122</sup> The guidelines provide a framework to assist States in implementing robust gear-marking

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<sup>118</sup> Pingguo He and Petri Suuronen, “Technologies for the marking of fishing gear to identify gear components entangled on marine animals to reduce abandoned, lost or otherwise discarded fishing gear” (2018) 129 Marine Pollution Bulletin 253-261 <<https://www.sciencedirect.com/science/article/abs/pii/S0025326X18301218>> accessed 04.12.2023.

<sup>119</sup> Eric Gilman et alia, “Matching fishery-specific drivers of abandoned, lost and discarded fishing gear to relevant interventions” <<https://www.sciencedirect.com/science/article/pii/S0308597X22001440?pes=vor>> (2022) 141 Marine Policy accessed 26.10.2023.

<sup>120</sup> Gilman et alia (n 119).

<sup>121</sup> UNEP and NOA, “The Honolulu Strategy. A Global Framework for Prevention and Management of Marine Debris” (UNEP and NOA 2011) <<https://wedocs.unep.org/bitstream/handle/20.500.11822/10670/Honolulu%20strategy.pdf?sequence=1&isAllowed=y>> accessed 19.11.2023.

<sup>122</sup> FAO (n 67) p. 1.

schemes, while taking national circumstances into account, making them applicable to both large-scale fleets and small-scale fisheries.<sup>123</sup> According to Paragraph 20, these schemes should allow for (a) reporting of ALDFG, (b) reporting of fishing gear found, (c) recovery of ALDFG, and (d) safe and environmentally sound disposal of unwanted gear. There have been discussions of including gear marking in MARPOL Annex V, effectively making it mandatory for vessels to mark their gear.<sup>124</sup> This has however not yet been made a legal obligation and the voluntary guidelines therefore remain the principal global instrument. That being said, the VGMFG has been adopted by FAO Member States and is considered an important step in promoting the responsible management of fishing gear.<sup>125</sup>

The Honolulu Strategy is a framework seeking to reduce the negative impacts of marine debris. The Strategy does not impose obligations on States to take specific measures, but serves as a planning tool for governments to use, providing a common frame of reference for collaboration. It highlights the reduction of sea-based sources of marine debris introduced into the sea, including ALDFG, as one of its three overarching goals. To achieve this goal it provides a variety of possible strategies and actions. One such strategy is Strategy B5, which seeks the development and promotion of fishing gear modifications or alternative technologies to reduce the loss of fishing gear or to reduce its impact as ALDFG.

At a regional level measures are contained in the North-East Atlantic Fisheries Commission Schemes of Control and Enforcement (NEAFC Scheme)<sup>126</sup>, the Control Regulation<sup>127</sup> and the Implementing Regulation<sup>128</sup>.

Article 7 of the NEAFC Scheme provides that each Contracting Party shall ensure that gear used by its fishing vessels in the NEAFC Regulatory Area is marked consistent with the

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<sup>123</sup> Tricia A. Lovell, “Implementing the voluntary guidelines for the marking of fishing gear in eastern Caribbean small-scale fisheries: An assessment of gear marking provisions” (2023) 194 *Marine Pollution Bulletin* <<https://www.sciencedirect.com/science/article/pii/S0025326X23007269#bb0050>> accessed 26.10.2023.

<sup>124</sup> IMO, “Meeting Summaries and Schedule. Marine Environment Protection Committee (MEPC) – 78<sup>th</sup> session, 6-10 June 2022” (*imo.org*) <<https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-78th-session.aspx>> accessed 26.10.2023.

<sup>125</sup> EIA (n 85). p. 6.

<sup>126</sup> NEAFC Commission, “NEAFC Scheme of Control and Enforcement” (2021) <<https://faolex.fao.org/docs/pdf/mul190964.pdf>> accessed 03.12.2023.

<sup>127</sup> Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy [2009] OJ L343/1.

<sup>128</sup> Commission Implementing Regulation (EU) No 404/2011 on laying down detailed rules for the implementation of Council Regulation (EC) No 1224/2009 [2011] OJ L112/1.

Convention on Conduct of Fishing Operations in the North Atlantic<sup>129</sup>. Annexes II and IV of this Convention provide rules for the marking of nets, lines and other gear. If the gear is unmarked or illegal, Article 7a of the NEAFC Scheme gives the Contracting Parties a right to remove and dispose of it.

In the context of the EU, there are multiple instruments in place to regulate gear marking. The EU is a Contracting Party to the NEAFC, and so EU fishing vessels must abide by the provisions in the NEAFC Scheme. In addition, the European Commission has encouraged Member States to adopt the VGMFG,<sup>130</sup> and has implemented multiple Regulations that makeup legally binding gear marking systems for Member States and their citizens. These Regulations are discussed below.

The Control Regulation seeks to simplify the EU fisheries control system, make it more effective and efficient and ensure full compliance with the Common Fisheries Policy<sup>131</sup>.<sup>132</sup> Article 8 of the Regulation provides that the master of a fishing vessel has to respect the conditions and restrictions set for the marking and identification of the vessel and its gear. These conditions are further regulated in the Implementing Regulation, which contains several provisions on gear marking.

Article 9 of the Implementing Regulation contains various rules for the marking of buoys, beam trawls and “passive gear”. “Passive gear” is defined in Article 2 (6) as “any fishing gear the catch operation of which does not require an active movement of the gear”, followed by a non-exhaustive list of gear covered by the definition. Article 9 essentially prohibits the use of gear which are not marked and identifiable in accordance with the detailed provision set out in Article 10-17. In addition, Article 9 makes it a strict liability offence for vessels to carry unmarked gear on board. Harbours unmarked gear on the vessel is therefore an offence in itself, regardless of the intentions of the perpetrator. Lastly, Article 8 of the Implementing Regulation requires FADs and crafts carried on EU fishing vessels to be marked with external registration letters and the number of fishing vessels that use them.

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<sup>129</sup> Convention on Conduct of Fishing Operations in the North Atlantic.

<sup>130</sup> European Parliament (n 50) para. 19.

<sup>131</sup> Regulation (EU) No 1380/2013 on the Common Fisheries Policy [2013] OJ L354/22.

<sup>132</sup> European Commission, “Control Regulation” (*oceans-and-fisheries.ec.europa.eu*) <[https://oceans-and-fisheries.ec.europa.eu/fisheries/rules/enforcing-rules/control-regulation\\_en](https://oceans-and-fisheries.ec.europa.eu/fisheries/rules/enforcing-rules/control-regulation_en)> accessed 26.10.2023.

Looking at these legal instruments it becomes evident that there are various references to gear marking in both the global and regional legislation, providing several legal subjects with rules, strategies and liabilities in connection to the use of fishing gear. On a global level the VGMFG provide clear guidance on gear marking, but its voluntary scope makes it reliant on voluntary action for it to have effect. It would therefore appear that the European Commission, through its legally binding Regulations, provide the most detailed legislation regarding gear marking.

#### 4.7 Adequate Port Reception Facilities

With multiple legal instruments prohibiting the intentional disposal of fishing gear at sea, port reception facilities are crucial for incentivising environmentally appropriate end-of-life treatment of fishing gear.

Article 2 (6) of the Port Reception Facilities Directive (PRF Directive)<sup>133</sup> defines port reception facilities as “any facility which is fixed, floating or mobile and capable of providing the service of receiving the waste from ships”. These facilities are regulated by MARPOL and the VGMFG at a global level and the PRF Directive at a regional level.

Regulation 8 of MARPOL Annex V requires that State Parties ensure the provision of adequate port reception facilities and terminals for the reception of garbage from ships. Parties must also notify IMO of alleged inadequate facilities. Similarly, Article 44 of the VGMFG provides that States should, in accordance with MARPOL Annex V, ensure the provision of adequate port reception facilities for the disposal of recovered ALDFG and fishing gear no longer in use. However, neither the Annex nor the guidelines clarify what defines an “adequate” facility, the design of these facilities or how they are to be implemented.

This unclarity is to a large extent covered by the multiple instruments that seek to supplement MARPOL Annex V, such as the IMO guidelines for ensuring the adequacy of port reception facilities.<sup>134</sup> The Resolution describes “adequate” in its Section 3 as: “To achieve adequacy the port should have regard to the operational needs of users and provide reception facilities for the types and quantities of wastes from ships normally visiting the port”, in addition, the

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<sup>133</sup> Directive (EU) 2019/883 on port reception facilities for the delivery of waste from ships [2019] OJ L151/166.

<sup>134</sup> IMO Resolution MEPC.83(44) Guidelines for ensuring the adequacy of port waste reception facilities.

facilities must “[...] allow for the ultimate disposal of ships’ waste to take place in an environmentally appropriate way.”<sup>135</sup>

Further, the Guidance Document published by the GloLitter Partnership project between FAO and IMO on Port Waste Management Plans provides that in fishing ports, separate collection can be required of end-of-life/damaged fishing gear, passively fished waste and recovered ALDFG.<sup>136</sup> It further states that the adequacy of port reception facilities can be improved by establishing “up-to-date Port Waste Management Plans.”<sup>137</sup> The purpose of these plans is to “improve the availability, adequacy and usage of reception facilities.”<sup>138</sup> The Guidance Document further argues that wastes generated by fishing vessels are less diverse compared to other types of shipping and that the use of skips and waste containers on the quayside can be quite an adequate port reception facility.<sup>139</sup>

From this, it can be concluded that the ability to receive different types and quantities of waste from ships and the ability to lay ground for the environmentally appropriate disposal of said waste are important factors in determining whether a reception facility is adequate. It can also be argued that for a reception facility to be adequate it must be available to the users, not only in terms of the actual ability to receive waste from ships, but also in terms of it being economically feasible for the users to utilise the reception facility.

The implementation of the polluter pays principle generally requires that the polluter bears some or all of the costs of waste disposal. However, if the cost of lawful disposal is too high it may deter users from seeking out port reception facilities and rather dispose of their waste at sea.<sup>140</sup> Although MARPOL does not require Contracting Parties to install cost recovery systems for their port reception facilities, the Guidelines for the Implementation of MARPOL Annex V provide that port reception facilities “may call for capital investment from port and terminal operators [and] the garbage management companies serving those ports.

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<sup>135</sup> IMO (n 134) para. 3.3.2.

<sup>136</sup> Peter Van den dries, «Guidance Document on Developing a Port Waste Management Plan” (FAO and IMO 2022)

<[https://wwwcdn.imo.org/localresources/en/OurWork/PartnershipsProjects/Documents/GloLitter/Online%20-%20GloLitter%20PWMP%20\(ENG\)%20-%20Guidance%20Document%20on%20Developing%20a%20Port%20Waste%20Management.pdf](https://wwwcdn.imo.org/localresources/en/OurWork/PartnershipsProjects/Documents/GloLitter/Online%20-%20GloLitter%20PWMP%20(ENG)%20-%20Guidance%20Document%20on%20Developing%20a%20Port%20Waste%20Management.pdf)> accessed 4.12.2023 p. 15.

<sup>137</sup> Van den dries (n 136) p. 7.

<sup>138</sup> Van den dries (n 136) p. 7.

<sup>139</sup> Van den dries (n 136) p. 54-55.

<sup>140</sup> Addressed in Chapter 2.3.

Governments are encouraged to evaluate means within their authority to lessen this impact, thereby helping to ensure that garbage delivered to port is actually received and disposed of properly.”<sup>141</sup> It also provides examples of such means, such as tax incentives and special funds.

At a regional level, the PRF Directive contains incentives for ships to deliver their waste, including fishing gear, back to shore. The Directive aligns the EU regime with MARPOL Annex V, as far as feasible.<sup>142</sup> Article 4 of the Directive requires Member States to “ensure the availability of port reception facilities adequate to meet the need of the ships normally using the port without causing undue delay to ships”. Unlike MARPOL Annex V, Article 4 (2) also provides requirements for what makes such facilities adequate. In addition, Article 5 of the Directive requires that Member States ensure that “an appropriate waste reception and handling plan” is in place and implemented in each port. Such plans are recognised in preamble 28 as essential to ensure the adequacy of port reception facilities.

When it comes to the cost of lawful disposal at port, Article 8 of the Directive requires Member States to set up fee-recovery systems in their legislation. Rather than being borne by the port user, in line with the polluter pays principle, all costs for port reception facilities are to be covered by fees from ships, irrespective of the delivery of waste to such facilities. In addition, ports can neither charge direct fees upon delivery nor add charges based on the volume of waste delivered, except where this exceeds the maximum dedicated storage capacity. In addition, Article 43 (1) of the European Maritime and Fisheries Fund Regulation (EMFF Regulation)<sup>143</sup> allows for the EMFF, the Union’s main funding mechanism for the fisheries sector, to invest in “improving the infrastructure of fishing ports [...] including investment in facilities for waste and marine litter collection.”

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<sup>141</sup> IMO (n 92) para. 6.3.1.

<sup>142</sup> Marketa Pape, “Port reception facilities for the delivery of wastes from ships” (*europarl.europa.eu*, 2019) <<https://www.europarl.europa.eu/legislative-train/theme-new-boost-for-jobs-growth-and-investment/file-port-reception-facilities-for-the-delivery-of-waste-from-ships>> accessed 20.10.2023.

<sup>143</sup> Regulation (EU) No 508/2014 on the European Maritime and Fisheries Fund [2014] OJ L149/1.

## 5. Extended producer responsibility schemes

### 5.1 Introduction to Extended Producer Responsibility

Tightly linked to preventive measures is the act of imposing responsibility. Extended Producer Responsibility (EPR) is one way of imposing legal responsibility and will be the further focus of this chapter.

ERP is defined as an environmental policy approach in which “a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle.”<sup>144</sup> Companies are thus required to be engaged in the circular economy in which a product’s design and production respect the need for reuse, repair and recycling.<sup>145</sup> According to the United Nations Environment Programme (UNEP), well-designed EPR schemes for fishing gear have the potential to play a “significant role in preventing accidental losses and discouraging illegal discharges”, “promoting design with environmental impacts considered”, and overcoming “hurdles to end-of-life treatment.”<sup>146</sup>

Similar views have been expressed by the European Commission. In the EU EPR is considered one of the most effective municipal waste management policies,<sup>147</sup> and when it comes to fishing gear the Commission has noted that EPR schemes have the highest potential to reduce the ALDFG contribution to marine litter.<sup>148</sup> Such schemes can “contribute to easing cost burdens for small scale ports and/or fishing operators by ensuring that some or all of the costs linked to increased collection and treatment of litter from fishing gear in ports, and treatment, is taken over by the producers of fishing gear.”<sup>149</sup> The main goal for setting up EPR for fishing gear is “to reduce marine plastic pollution by preventing and reducing the volumes of used fishing gear and ropes into the environment.”<sup>150</sup>

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<sup>144</sup> OECD, “Extended Producer Responsibility” (*oecd.org*) <<https://www.oecd.org/environment/extended-producer-responsibility.htm>> accessed 02.12.2023.

<sup>145</sup> European Parliament, (n 65) preamble 1; Khairun Tumu, Keith Vorst and Greg Curtzwiler “Global plastic waste recycling and extended producer responsibility laws” (2023) 348 *Journal of Environmental Management* <<https://www.sciencedirect.com/science/article/pii/S0301479723020303>> accessed 05.12.2023.

<sup>146</sup> EIA (n 117) p. 6.

<sup>147</sup> Tumu et al (n 145).

<sup>148</sup> European Commission, “Commission Staff Working Document Impact Assessment, Reducing Marine Litter: Action on Single Use Plastic and Fishing Gear” (European Commission 2018) <<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52018SC0254&from=EN>> accessed 21.10.2023 para. 7.2.

<sup>149</sup> European Commission (n 148) para. 7.2.

<sup>150</sup> ICUN, “Advocating Extended Producer Responsibility for fishing gear” <[https://www.iucn.org/sites/default/files/2023-05/position\\_paper-epr\\_fishing\\_gear\\_and\\_ropes.pdf](https://www.iucn.org/sites/default/files/2023-05/position_paper-epr_fishing_gear_and_ropes.pdf)> (IUCN/Searious Business/GGGI/UNEP/Ellen MacArthur Foundation) accessed 05.12.2023 p. 1.

## 5.2 Addressing the duty to establish schemes and possible challenges

At a global level, there appears to be a lack of legally binding instruments that impose a duty to introduce EPR schemes to fishing gear. That being said, in May 2022, UNEP and the Norwegian Retailers' Environmental Fund launched the Enhancing Global and National Capacity to Implement Extended Producer Responsibility and to Improve Resource Efficiency project. The project aims to develop global EPR guidelines, operational manuals and supporting toolkits to harmonize EPR approaches on a global level.<sup>151</sup> The project will be implemented from January 2022 to December 2025.

At a regional level Article 8 of the SUP Directive requires Member States, “in line with the polluter-pays principle”, to set up EPR schemes for producers of fishing gear containing plastic by 31<sup>st</sup> December 2024. These schemes are to hold the producers financially responsible for the whole lifecycle of the product, including “awareness raising, waste and end-of-life stage collection, transport and treatment.”<sup>152</sup> Additionally, Article 13 of the Directive requires Member States to report the amount of fishing gear being placed on the market and the waste fishing gear collected.

However, setting up EPR schemes for producers of fishing gear can pose some challenges. The biggest unknown factor is the definition of a producer under the EPR schemes.<sup>153</sup> Assemblers, importers, producers, repairers and wholesalers all participate throughout the product's lifecycle, making it important that Member States clarify who is considered a producer.<sup>154</sup> For fishing gear, this might become even more challenging for equipment consisting of multiple components made by different actors, such as crab pots. Even more so when international production takes place. Other challenges include defining other legal terms related to EPR for fishing gear, engaging key stakeholders and avoiding jurisdictional loopholes.<sup>155</sup>

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<sup>151</sup> UNEP, “Reducing Plastic Pollution through the Extended Producer Responsibility” (*unep.org*) <<https://www.unep.org/reducing-plastic-pollution-through-extended-producer-responsibility>> accessed 20.11.2023.

<sup>152</sup> European Commission, “Workshop on the implementation of EU legislation related to waste fishing gear and passively fished waste in ports” (*maritime-forum.ec.europa.eu*) <[https://maritime-forum.ec.europa.eu/contents/workshop-implementation-eu-legislation-related-waste-fishing-gear-and-passively-fished-waste-ports\\_en](https://maritime-forum.ec.europa.eu/contents/workshop-implementation-eu-legislation-related-waste-fishing-gear-and-passively-fished-waste-ports_en)> accessed 05.12.2023.

<sup>153</sup> European Commission (n 152).

<sup>154</sup> European Commission (n 152).

<sup>155</sup> ICUN (n 150) p. 6.



Moreover, the SUP Directive does not specify which type of EPR scheme the Member States should adopt. However, there have been published Recommendations for setting up EPR policies and schemes for fishing gear for authorities and other relevant stakeholders to consider.<sup>156</sup> In addition, it has also been recognised that EPR schemes for fishing gear can build upon the experience of EPR schemes for other types of end-of-life products at a national and regional level.<sup>157</sup> It is therefore worth having a closer look at how some of the Member States have chosen to structure their EPR schemes.

Sweden was one of the first Member States to transpose the SUP Directive into their national framework.<sup>158</sup> Ordinance 2021: 1001<sup>159</sup> introduces EPR for fishing gear, though only professional use is covered. To fulfil their obligations producers of fishing gear, that is, “operators selling fishing gear on the Swedish market”,<sup>160</sup> must register their company at the Swedish Environmental Protection Agency and they must hold a contract with a producer responsibility organisation by the end of 2024.<sup>161</sup> In addition, the national collection target, which is at least 20 per cent of the weight of the fishing gear released in the Swedish market during the same calendar year, will be applicable from 2023.

France currently has 12 EPR systems, making it one of the leading countries in Europe in this area.<sup>162</sup> Producers take responsibility for the management of their waste through approved eco-organisations or individual systems. These organisations are collectively set up by the producers. Producers can transfer their obligations to these organisations in return for a financial contribution.<sup>163</sup> The eco-organisations also issue an identification number to the producers as proof that the producer is registered with an eco-organisation and has paid the financial contribution. The producer is obliged to have this number in its general terms and

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<sup>156</sup> ICUN (n 150) p. 2-6.

<sup>157</sup> ICUN (n 150) p. 2.

<sup>158</sup> Landbell Group, “Another country introduces EPR for fishing gear” (*landbell-group.com*, 2022) <<https://landbell-group.com/news/another-country-introduces-epr-for-fishing-gear/>> accessed 20.11.2023.

<sup>159</sup> SFS 2021:1002 Förordning om producentansvar för fiskeredskap.

<sup>160</sup> Swedish Agency Marine and Water Management, “Producer responsibility for fishing gear” (*havochvatten.se*, 2022) <<https://www.havochvatten.se/en/facts-and-leisure/environmental-impact/producer-responsibility-for-fishing-gear.html>> accessed 05.12.2023.

<sup>161</sup> Naturvårdsverket, “Extended producer responsibility for fishing gear” (*naturvardsverket.se*) <<https://www.naturvardsverket.se/en/guidance/extended-producer-responsibility-epr/extended-producer-responsibility-for-fishing-gear/#E-13547940908>> accessed 05.12.2023.

<sup>162</sup> Julia Planty and Fabien Stade, “France: New developments in the Extended Producer Responsibility (EPR) regime” (*roedl.com*, 2023) <<https://www.roedl.com/insights/france-new-developments-in-the-extended-producer-responsibility-regime>> accessed 06.12.2023.

<sup>163</sup> Planty and Stade (n 162) .

conditions of sale or other contractual documents.<sup>164</sup> Article 62 of the Anti-Waste for a Circular Economy Law<sup>165</sup> provides that producers of fishing gear containing plastics will be covered by such EPR systems by 2025.

From all of this, it can be concluded that establishing EPR schemes for fishing gear may prove to be a challenge, but if done properly it can play a crucial role in the regulation of multiple stages of the fishing gear lifecycle. With the SUP Directive being legally binding it lays the ground for harmonisation on a regional level, allowing Member States to implement diverse, yet harmonising, schemes rapidly and effectively.

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<sup>164</sup> Planty and Stade (n 162).

<sup>165</sup> LOI n° 2020-105 du 10 février 2020 relative à la lutte contre le gaspillage et à l'économie circulaire.

## 6. Mitigation measures

### 6.1 Introduction

Mitigation measures seek to reduce the *impact* of fishing gear on the environment if and when it becomes ALDFG, given that some level of gear loss is unavoidable.<sup>166</sup> According to studies such measures are generally less widely adopted as the implementation of these may increase costs through higher prices of fishing gear and/or reduced effectiveness.<sup>167</sup>

### 6.2 Gear design

The various types of fishing gear used in the North-East Atlantic are composed of a wide selection of plastic materials.<sup>168</sup> With this wide variety, the OSPAR Commission and the EU have both recognised the need for the design of fishing gear to employ a circular economy approach, taking into account the potential for reuse and recyclability at end-of-life.<sup>169</sup> Efforts to integrate fishing gear into a more circular economy include modification and enhancing its reusability and recyclability.<sup>170</sup> Biodegradable fishing gear has also been recognised as an important circularity aspect that “offers potential in global mitigation efforts.”<sup>171</sup> Studies have found that using less durable and biodegradable materials for fishing gear components can reduce both ghost fishing durations and the transfer of toxins from ALDFG into marine food webs.<sup>172</sup>

Implementation such of sustainable, and more circular, design for fishing gear is captured in the Bycatch Guidelines at a global level, and in the SUP Directive at a regional level.

The Bycatch Guidelines identify measures deemed necessary to ensure the conservation of target and non-target species. The guidelines themselves do not provide any gear-based regulations for States to adopt, rather it present in Article 7.3 (2) the “improvement of the design and use of fishing gear and bycatch mitigation devices” as a tool to manage bycatch and reduce discards that States and RFMO/As “should ensure”. In addition, Article 7.5.1 provides a range of technological measures to improve selectivity and reduce bycatch and

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<sup>166</sup> Drakeford et alia (n 37).

<sup>167</sup> Savels et alia (n 86).

<sup>168</sup> OSPAR Commission (n 41) para 3.1.

<sup>169</sup> European Parliament, (n 65) Article 8 (9); OSPAR Commission (n 41) para 5.2.

<sup>170</sup> Benjamin M. Drakeford, Andy Forse and Pierre Failler, “Biodegradability and sustainable fisheries: The case for static gear in the UK Channel fishery” (2023) 155 *Marine Policy* <<https://www.sciencedirect.com/science/article/pii/S0308597X2300307X>> accessed 06.12.2023.

<sup>171</sup> Drakeford et alia (170).

<sup>172</sup> Gilman et alia (n 119).

discards that States and RFMO/As “should consider”, including “changing the design, rigging and deployment of fishing gear”, “installing bycatch reduction devices” and “using an alternative fishing gear that results in lower bycatch”.

Article 8 (9) of the SUP Directive requires the European Commission to request the European standardisation organisations to “develop harmonised standards relating to the circular design of fishing gear to encourage preparing for re-use and facilitate recyclability at end of life”. The standard is due to be finalised by 2024 and should “describe design principles, specify requirements and provide guidance for circular design of fishing gear in order to minimize the adverse environmental impacts of the product”.<sup>173</sup> Seeing as there are currently no standards for circular design of fishing gear,<sup>174</sup> it is possible that once developed, this legally binding standard could influence the global criteria for gear design, if these are developed.

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<sup>173</sup> European Commission, Commission Implementing Decision of 10.2.2021 on a standardization request to the European Committee for Standardisation as regards circular design of fishing gear in support of Directive (EU) 2019/904 [2021] OJ L211/51 preamble 15.

<sup>174</sup> European Commission (n 173) preamble 8.

## 7. Curative measures

### 7.1 Introduction

Curative measures consist of removing ALDFG from the environment.<sup>175</sup> As these measures are reactive to the presence of ALDFG they are considered less effective than measures preventing ALDFG from entering the environment in the first place.<sup>176</sup> That being said, studies have found that the localisation, retrieval and disposal of ALDFG can be cost-effective compared to the cost of leaving it in the environment.<sup>177</sup> Measures include recovering ALDFG from the environment and reporting the loss.<sup>178</sup>

### 7.2 Recovering ALDFG

Several legal instruments emphasise the restoration of marine ecosystems where these have been harmed or affected by human interaction.<sup>179</sup> Recovering ALDFG involves locating the gear and removing it from the environment. At a global level gear recovery is implemented in the VGMFG and the International Commission for the Conservation of Atlantic Tunas (ICCAT) Recommendation on Abandoned, Lost or Otherwise Discarded Fishing Gear (ALDFG Recommendation)<sup>180</sup>. At a regional level, it is regulated by the NEAFC Scheme in addition to the EU Control Regulation and EMFF Regulation.

The VGMFG contains several provisions for the recovery of ALDFG. Paragraph 39 provides that States should encourage owners/operators of fishing gear to make every reasonable effort to retrieve ALDFG and report to the relevant authority if they fail to do so. In addition, Paragraph 40 provides that such recovery should be undertaken with due regard to the damage retrieval may have on the marine environment.

When it comes to the ICCAT, Paragraph 1 of the ALDFG Recommendation suggests that each Contracting Party shall ensure that fishing gear is not abandoned or discarded within the ICCAT Convention Area, except for safety reasons. Paragraph 3 suggests that Contracting Parties ensure that vessels 12 metres and above fishing for ICCAT species in the ICCAT Convention area have equipment on board to retrieve lost fishing gear and that the master of

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<sup>175</sup> Savels et alia (n 86) p. 3.

<sup>176</sup> Macfayden et alia (n 2) p. 17.

<sup>177</sup> Macfayden et alia (n 2) p. xviii.

<sup>178</sup> Richardson et alia (n 35).

<sup>179</sup> See for example Article 1 (2) (a) of the Marine Strategy Framework Directive.

<sup>180</sup> Recommendation 19-11 by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear <<https://www.iccat.int/Documents/Recs/compendiopdf-e/2019-11-e.pdf>> accessed 02.12.2023.

the fishing vessel, to the extent possible, makes every reasonable attempt to retrieve lost gear as soon as possible.

At a regional level, Article 7b of the NEAFC Scheme imposes obligations on both Contracting Parties and individual fishing vessels. Contracting Parties are to require that their fishing vessels do not deliberately abandon or discard fishing gear. In accordance with MARPOL Annex V, Contracting Parties are also to prohibit their fishing vessels from discarding garbage into the sea. In addition, Contracting Parties must retrieve lost fixed gears regularly. If the retrieved gear has not been reported as lost, the Contracting Party may recover the cost from the master of the vessel that lost the gear. This entails, however, that the gear has been adequately marked and the owner can be identified. When it comes to fishing vessels they are required to keep equipment to retrieve lost gear on board and shall attempt to recover its lost gear as soon as possible.

In the context of the EU, Article 48 (1) of the Control Regulation requires every EU fishing vessel, with some exceptions, to keep equipment on board to retrieve lost gear. The master of the vessel is also required to attempt to retrieve the gear as soon as possible.

In addition, Article 40 (1) (a) of the EMFF Regulation provides that the EMFF may financially support “the collection of waste by fishermen from the sea such as removal of lost fishing gear and marine litter”.

### 7.3 Reporting ALDFG

Reporting gear can aid retrieval as it is easier to retrieve gear with a known location.<sup>181</sup>

Reporting can also help with understanding the extent, location and cause of gear loss, which is important for the development of effective preventive measures.<sup>182</sup> A duty to report lost gear is implemented in multiple legal instruments. At a global level, this duty is regulated by MARPOL, the ALDFG Recommendation, the London Protocol and OSPAR. At a regional level, it is regulated by the NEAFC Scheme and the EU Control Regulation.

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<sup>181</sup> Joan Drinkwin, “Reporting and retrieval of lost fishing gear: recommendations for developing effective programmes” (FAO and IMO 2022) <<https://www.fao.org/3/cb8067en/cb8067en.pdf>> accessed 19.11.2023 p. 6.

<sup>182</sup> Drinkwin (n 181) p. 6.

At a global level, there appears to be a distinction between reporting accidental and intentional loss or discharge of gear. Accidental loss and discharge are regulated by MARPOL. Regulation 10 (6) of MARPOL Annex V imposes a duty on fishing vessel operators to report the accidental loss or discharge of fishing gear to the relevant flag State. If this occurred within waters subject to another coastal State's jurisdiction, fishing vessel operators must report to this State as well. However, the duty to report only comes into effect in cases posing a "significant threat to the marine environment". It is hard to draw the line of what constitutes a "significant threat". While it is difficult to see how one item, or a few components, of fishing gear alone could pose such a threat, much has yet to be learned about ALDFG and its consequences. Not having a fixed checklist of which gear losses to report therefore allows Contracting Parties to further determine what they consider a significant threat to their environment alongside the developing scientific knowledge on the area.

The issue of unclarity in Regulation 10 (6) is also partially addressed by the Guidelines for the Implementation of MARPOL Annex V.<sup>183</sup> The guidelines provide that Governments should determine which accidental loss or discharge of fishing gear is required to be reported. In determining this, Governments are encouraged to consider various factors such as the amount lost or discharged and the conditions of the environment in question. The guidelines further provide examples of fishing gear that can pose a "significant" threat, including "whole or nearly whole large fishing gear or other large portions of gear".<sup>184</sup> Ultimately, however, it is left up to the Governments to determine whether reporting should be required or not.

Moreover, even if reporting is not required, the guidelines specify that fishing vessel operators are required to "record the discharge or loss of fishing gear in the Garbage Record Book or the ship's official log-book".<sup>185</sup> In addition, Governments should consider the use of garbage management reporting systems, with particular attention being given to the reporting of lost fishing gear and discharge at port reception facilities.<sup>186</sup>

Paragraph 4 of the ALDFG Recommendation recommends that the master of the vessel that has lost its fishing gear must notify the flag Contracting Party within 24 hours. The notice

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<sup>183</sup> IMO (n 92) para. 2.2.2.

<sup>184</sup> IMO (n 92) para. 2.2.2

<sup>185</sup> IMO (n 92) para. 2.2.1.

<sup>186</sup> IMO (n 92) para. 6.2.4 and 6.2.5.

must include the name and call sign of the vessel involved, the type and quantity of gear lost, the date, time and the vessel's position when the gear was lost as well as which measures were taken to retrieve it. In addition, paragraph 5 recommends that vessels must report the retrieval of lost fishing gear. Paragraph 6 recommends that the flag Contracting Party notifies the Executive Secretary of the ICCAT of the information referred to in paragraphs 4 and 5.

Intentional loss is regulated by the London Protocol and OSPAR. Article 8 (1) of the London Protocol requires Contracting Parties to report legal dumping to IMO. Dumping is only allowed in cases of force majeure or where it is necessary for the safety of human lives or of vessels, given that the consequences of such dumping "will be less than would otherwise occur". Similarly, Article 7 of OSPAR Annex II requires Contracting Parties to report legal dumping to the OSPAR Commission. Unlike the London Protocol, however, OSPAR does not require the consequences of action to be outweighed by the consequences of inaction. Instead, Article 7 requires the reporting to provide "full details of the circumstances and of the nature and quantities of the wastes or other matter dumped". It therefore appears that it is easier to justify dumping under OSPAR and in return, the reporting requirements are stricter.

At a regional level, Article 7b of the NEAFC Scheme requires the master of the fishing vessel that has lost its fishing gear to notify its flag State within 24 hours. The notice must include the same information that is suggested in the ALDFG Recommendation, with the exception that it is not required to report measures that were taken to retrieve the lost gear, only if attempts have been made. Contracting Parties must then notify the Secretary of NEAFC of the received information.

In the context of the EU Article 48 (3) of the Control Regulation requires the master of the fishing vessel involved to report gear loss to its flag Member State, given that it cannot retrieve the lost gear. The flag Member State must then inform the coastal Member State within 24 hours. The information to be reported coincides with the requirements laid down by the ICCAT and NEAFC.



## 8. Conclusion and final reflections

This thesis has sought to clarify the current regulation of abandoned, lost or otherwise discarded fishing gear in the North-East Atlantic Ocean through an analysis of the global and regional instruments regulating the area. The main finding is that there exist rules on an international level that require States to hinder marine plastic pollution, including ALDFG.

However, my research has found that these rules do not address *how* States are to handle the problem of ALDFG. Instead, they serve as an access to deal with the problem through global and regional regulation and measures derived from it. This is done through instruments consisting of a combination of hard law and soft law.

From these instruments and their assessment, it can be derived that legislation and States' obligation to protect the marine environment lead to the adoption of preventive measures, the development of responsibility schemes, the adoption of mitigation measures, and finally, the imposition of obligations related to curative measures, as discussed in Chapters 4, 5, 6 and 7.

In the overall assessment of these measures, it appears that there is a general trend in which States and organisations in the sector set a central role in the interaction and regulation of marine plastic pollution and the question of responsibility – of the user or the producer of the devices. Out of the different categories, the legislation that leads to preventive measures appears to be the most detailed. Combined the regulation and measures derived from it appear to capture all stages of the fishing gear lifecycle, including design, use, trade end-of-life treatment and recovery. However, the current legal framework still forms a patchwork of instruments. As illustrated, this brings with it issues arising from the legislation being unclear, having a too limited scope to effectively regulate the problem, being reliant on voluntary actions or not being developed enough.

Based on this analysis, this study allows me to see future developments of importance. Among these, the developing Global Plastic Treaty is of particular interest. In May 2022 the UNEA adopted Resolution 5/14<sup>187</sup> to develop an international legally binding instrument on plastic pollution, including in the marine environment. I believe this Treaty will have an

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<sup>187</sup> UNEA Resolution 5/14 entitled “End plastic pollution: Towards an international legally binding instrument” (2022).

opportunity to force change and drive innovation regarding the regulation of ALDFG forward. However, as there remain big knowledge gaps as to the impacts, sources and solutions to ALDFG, and marine plastic pollution in general, I believe that there will be a need for a multidisciplinary approach to the development of the Treaty. Ideally, it will be based on the best available sciences and bring with it the possibility of imposing legal liability for polluting the environment.

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